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COMMISSIONER OF PATENTS AND TRADEMARKS**



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PROVISIONAL APPLICATION COVER SHEET

22183 U.S. PTO
11803

This is a request for filing a PROVISIONAL APPLICATION under 37 C.F.R. 1.53 (c)

Docket Number	1912.001PRV	Type a plus sign (+) inside this box >	+
Customer No.	21186	Confirmation No.	

INVENTOR(s)/APPLICANT(s)					
Name (last, first, middle initial)			RESIDENCE (CITY, AND EITHER STATE OR FOREIGN COUNTRY)		
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TITLE OF THE INVENTION (280 characters max)					
PLANT EXTRACT COMPOSITIONS THAT INHIBIT SKIN EXTRACELLULAR PROTEASES AND USES THEREOF					
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STATE	Minnesota	ZIP CODE	55402	COUNTRY	United States of America
ENCLOSED APPLICATION PARTS (check all that apply)					
XXX	Specification	Number of Pages	281		Small Entity Statement
XXX	Drawing(s)	Number of Sheets	6		Other (specify)
METHOD OF PAYMENT (check one)					
A check or money order is enclosed to cover the Provisional filing fees				PROVISIONAL FILING FEE AMOUNT	\$80.00
XXX The Commissioner is hereby authorized to charge the provisional application filing fee and any additional required fees or credit overpayment to Deposit Account Number: 19-0743					

15535 U.S. PTO
60/523183
11803

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.
XXX No.

Yes, the name of the U.S. Government agency and the Government contract number are:

Respectfully submitted,

SIGNATURE William F. Prout

Date November 18, 2003

TYPED OR PRINTED NAME William F. Prout

REGISTRATION NO. 33,995

Additional inventors are being named on separately numbered sheets attached hereto.

PROVISIONAL APPLICATION FILING ONLY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re **PROVISIONAL** Patent Application of: Benoit Cyr

Title: PLANT EXTRACT COMPOSITIONS THAT INHIBIT SKIN EXTRACELLULAR PROTEASES AND
USES THEREOF

Docket No.: 1912.001PRV

MAIL STOP PROVISIONAL APPLICATION

Assistant Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

We are transmitting herewith the following attached items (as indicated with an "X"):

- ☒ A PROVISIONAL Patent Application comprising:
 - ☒ Specification (281 pgs, including claims numbered 1 through 14 and a 1 page Abstract)
 - ☒ 6 Sheets of drawings.
- ☒ Provisional Application Cover Sheet (1 page) including authorization to charge the provisional application filing fee to Deposit Account No 19-0743.
- ☒ A return postcard.

Please charge any additional required fees or credit overpayment to Deposit Account No. 19-0743.

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

Customer Number: 21186

By: 

William F. Prout

Reg. No. 33,995

"Express Mail" mailing label number: EV 299 685 128 US

Date of Deposit: November 18, 2003

This paper or fee is being deposited on the date indicated above with the United States Postal Service pursuant to 37 CFR 1.10, and is addressed to the Assistant Commissioner for Patents, Attn: MAIL STOP PROVISIONAL PATENT APPLICATION, P.O. Box 1450, Alexandria, VA 22313-1450.

(NEW FILING)

PLANT EXTRACT COMPOSITIONS THAT INHIBIT SKIN EXTRACELLULAR PROTEASES AND USES THEREOF

FIELD OF INVENTION

5 The invention pertains to the field of protease inhibitors, specifically within the field of inhibitors of extracellular proteases.

BACKGROUND OF THE INVENTION

10 Mammalian skin is a complex organ that extends over the entire body and generally consists of two principal parts. The outer thinner part, the epidermis or cuticle, is organised into four or five cell layers depending on its location. These layers are the stratum corneum, stratum lucidum (usually only present where the skin is thickened), stratum granulosum, stratum spinosum and stratum basale. The inner, thicker part of the skin, the dermis or true skin, is composed of a papillary layer above and a reticular layer below. The dermis also comprises blood vessels, nerves, hair follicles and sweat glands. The layer below the dermis, the hypodermis, comprises mainly loose connective tissue and adipose cells and may be considered part of the skin in that it
15 functions to anchor the epidermis/dermis to the underlying bone and muscle. The hypodermis also supplies the dermis with blood vessels and nerves.

20 The cells of the skin, like those of other tissues, are generally in contact with a network of large extracellular macromolecules that occupies the spaces in a tissue between the component cells and between adjacent tissues. This extracellular matrix (ECM) functions as a scaffolding on which the cells and tissue are supported and is involved actively in regulating interaction of the cells that contact it. The principal macromolecules of the ECM include the collagens (the most abundant proteins in the body) and glycosaminoglycans (complex polysaccharides which are usually bonded to protein and then termed proteoglycans). Additional proteins that may be found in the ECM include elastin, fibronectin and laminin. The dermal layer of the skin is composed

largely of ECM (or "connective tissue") containing high proportions of collagen and elastin in which cells are embedded.

Components of the ECM are degraded by extracellular proteolytic enzymes that are secreted locally by cells. These proteases belong to one of four general classes: metalloproteinases, which depend on bound Ca^{2+} or Zn^{2+} for activity; serine proteases; aspartic proteases and cysteine proteases, which have a highly reactive serine, aspartate or cysteine residue in their respective active site (Vincenti *et al.*, (1994) *Arthritis and Rheumatism*, 37: 1115-1126). Various extracellular proteases cooperate to degrade proteins of the ECM, including collagen, elastin, laminin, and fibronectin.

10 In normal tissues, the activity of extracellular proteases is tightly regulated and the breakdown/production of the ECM is in dynamic equilibrium, resulting in a slow and continual turnover through degradation and resynthesis of the various ECM components in adult animals. The regulated turnover of ECM macromolecules is critical to a variety of important biological processes. Localised degradation of matrix components is required when cells migrate through a
15 basal lamina, as when white blood cells migrate across the vascular basal lamina into tissues in response to infection or injury. An upset in the balance of ECM turnover, however, can lead to a more generalised increase in the breakdown of the ECM as is seen, for example, in aging skin and angiogenesis, as well as in certain pathologies including metastasis of cancer cells.

Extracellular proteases, in particular matrix metalloproteinases (MMPs), have been implicated in
20 both chronological aging and photoaging processes (see, for example, U.S. Patent Application No. 200100513347). An age-related increase in levels of MMPs, in particular MMP-1, -2 and -9, in the skin has been demonstrated (see U.S. Patent Application No. 200100513347). An analogous increase in the level and/or activity of MMP-1, -2, -3 and -9 in the skin has also been shown to occur in response to UV exposure (see U.S. Patent No. 5,837,224). The aging process
25 (both chronological and photo-induced) involves the increased breakdown various components of the ECM in the skin, notably collagen, elastin and fibronectin. Enhanced expression of collagenase (MMP-1) and stromelysin-1 (MMP-3) has been described as playing a central role in connective tissue breakdown in the skin (Brenneisen, *et al.*, (2002) *Ann. N.Y. Acad. Sci.*, 973:31-43). Similarly, increased expression of serine elastase in hairless mouse models of chronological

and photo-aging was shown to result in increased fibronectin degradation (Labat-Robert, *et al.*, (2000) *J. Photochem. Photobiol. B.*, 57:113-118).

Methods of inhibiting either chronological or photo-aging of the skin by application of UV blocking compounds in combination with compounds that inhibit MMPs has been reported (U.S. Patent Nos. 5,837,224; 6,130,254 and 6,365,630 and U.S. Patent Application No. 20010053347). Mercaptoketone and mercaptoalcohol compounds that inhibit the activity of MMPs and their use in treating or controlling disease states such as arthropathy, dermatological conditions, bone resorption, inflammatory diseases and tumor invasion have also been described (U.S. Patent No. 6,307,101).

Elastic fibers are essential extracellular matrix macromolecules comprising an elastin core surrounded by a mantle of fibrillin-rich microfibrils. These fibers endow connective tissues such as blood vessels, lungs and skin with the critical properties of elasticity and resilience (see review of elastic fibers by Kielty CM *et al.*: *J Cell Sci* 2002;115,2817-2828). Exposure to the sun is known to cause disorganization of elastin in the skin known as "elastosis," which is also a hallmark of skin aging. Neutrophil elastase has been implicated in elastosis, for example, when compared to normal mice, mice that are deficient in neutrophil elastase are unaffected by exposure to UVB. In addition, an increase in elastase activity has been observed in the skin following chronic UVB irradiation (Tsukahara K *et al* *Biol Pharm Bull* 2001;24(9):998-1003). Both a synthetic inhibitor of fibroblast elastase and an extract of *Sanguisorba officinalis* L. inhibited wrinkle formation and maintained skin elasticity in the rat (Tsukahara K *et al* *Biol Pharm Bull* 2001;24(9):998-1003).

Other proteinases, including aspartic, cysteine, serine and metallo, produced by a number of different cell types including leukocytes and macrophages (Werb Z *et al*, *J Invest Dermatol* 1982;79(suppl 1):154s-159s) and fibroblasts (Szendroi M *et al* *J Invest Dermatol* 1984;83:224-229) are also elastinolytic.

In humans, microfibrils at the dermal-epidermal junction were shown to be significantly reduced in moderate to severely photoaged forearm skin. Confocal microscopy revealed that the papillary dermal microfibrillar network was truncated and depleted in photoaged skin (Watson RE *et al.*: *J*

Invest Dermatol. 1999 May;112(5):782-7) indicating that serine proteases, such as neutrophil elastase (human leukocyte elastase or HLE), are potent effectors for the catabolism of intact fibrillin microfibrils that are structural components of elastic fibers in the skin (Kielty CM et al: FEBS Lett 1994;351, 85-89).

- 5 In addition to its elastinolytic activity, HLE is involved in inflammation. Inhibitors of HLE have been shown to have anti-inflammatory activity (Tremblay GM et al, *Curr Opin Investig Drugs* 2003;4(5):556-565). In a comprehensive screen of a variety of plants including medicinal plants to detect anti-inflammatory products, Johansson et al identified several inhibitors, including *Rubus idaeus* and *Tabernaemontana dichotoma* (Johansson S et al, *J Nat Prod* 2002;65:32-41).
- 10 MMPs also play a role in the loss of elastic fibers in skin. Tissue loss during ageing and age-dependent pathologies are the result of a disturbed regulation of proteolytic activities in which elastase-type endopeptidases, especially MMP-2 and -9, are overactivated (Isnard N et al: *Biomed Pharmacother.* 2002 Jul;56(5):258-64). In addition, gelatinase B (MMP-9) has been shown to degrade fibrillin in human skin tissue sections (Berton A et al, *Matrix Biol*
- 15 2000;19(2):139-148).

Although the data on the mechanism of elastin loss in the skin is somewhat limited, one of the best documented effects of MMPs is in the degradation of elastic fibers in blood vessels or in the lung. For example, while it is known that elastase activity precipitates the beginning of aneurysms of the abdominal aorta (AAA), in the absence of MMP-9 AAAs do not progress.

- 20 Various human arterial tissues produce MMP-2, but MMP-9 is more specifically produced by macrophages in AAA (Thompson RW et al: *J Clin Invest* 1995;96(1):318-326). The presence of inflammatory cells in the outer aortic wall is the histological feature most clearly associated with expansion of the aneurysm (Freestone et al: *Arterioscler Thromb Vasc Biol* 1995;15:1145-1151). MMP-9 expression increases with the size of aneurysms in humans (McMillan WD et al:
- 25 *Circulation* 1997;96:2228-2232). A study with knock-out mice indicated that when MMP-9 is knocked out, there is only a slight increase in aortic diameter following perfusion with pancreatic elastase (Pyo R et al: *J Clin Invest* 2000 Jun;105(11):1641-9). On the other hand, when MMP-12 (macrophage elastase or metalloelastase) is knocked out, there is full expansion of the abdominal aorta. When both MMP-9 and MMP-12 are knocked out, there is no increase in aortic diameter

at all compared with the negative control, suggesting that the presence of MMP-12, although not sufficient by itself to cause full development of aneurysms, does cause a slight swelling of the artery.

5 A number of patents and publications report the inhibition of one or more extracellular proteases by compounds extracted from plants. For example, Sun *et al.*, (1996) *Phytotherapy Res.*, 10: 194-197, reports the inhibition *in vitro* of stromelysin (MMP-3) and collagenase by betulinic acid extracted from *Doliocarpus verruculosus*. Sazuka *et al.*, (1997) *Biosci. Biotechnol. Biochem.*, 61: 1504-1506, reports the inhibition of gelatinases (MMP-2 and MMP-9) and metastasis by compounds isolated from green and black teas. Kumagai *et al.*, JP 08104628 A2, April 1, 1996
10 (CA 125: 67741) reports the use of flavones and anthocyanines isolated from *Scutellaris baicanlensis* roots to inhibit collagenase. Gervasi *et al.*, (1996) *Biochem. Biophys. Res. Comm.*, 228: 530-538, reports the regulation of MMP-2 by some plant lectins and other saccharides. Dubois *et al.*, (1998) *FEBS Lett.*, 427: 275-278, reports the increased secretion of deleterious gelatinase-B (MMP-9) by some plant lectins. Nagase *et al.*, (1998) *Planta Med.*, 64: 216-219,
15 reports the weak inhibition of collagenase by delphinidin, a flavonoid isolated from *Solanum melongena*.

Other reports include Asano *et al.* ((1998) *Immunopharmacology*, 39: 117-126), which describes the inhibition of TNF- α production using *Tripterygium wilfordii* Hook F. extracts; Maheu *et al.* ((1998) *Arthritis Rheumatol.*, 41: 81-91), which reports the use of avocado/soy bean non-saponifiable extracts in the treatment of arthritis; Makimura *et al.* ((1993) *J. Periodontol.*, 64: 630-636), which reports the use of green tea extracts to inhibit collagenases *in vitro* and Obayashi *et al.* ((1998) *Nippon Keshonin Gijutsusha Kaishi*, 32: 272-279 (CA 130: 92196)), which reports the inhibition of collagenase-I (MMP-1) from human fibroblast and neutrophil elastase by plant extract from Eucalyptus and Elder.

25 A process for obtaining plant extracts capable of inhibiting various extracellular proteases has been described in International Patent Application PCT/CA02/00285 (Publication No. WO 02/06992). These extracts were screened on the basis of their ability to inhibit extracellular proteases in *in vitro* assays. The use of these extracts to inhibit extracellular proteases *in vivo* or

to inhibit processes associated with the activity of such proteases, however, is not described or suggested.

This background information is provided for the purpose of making known information believed by the applicant to be of possible relevance to the present invention. No admission is necessarily
5 intended, nor should be construed, that any of the preceding information constitutes prior art against the present invention.

SUMMARY OF THE INVENTION

An object of the invention is to provide plant extract compositions that inhibit skin extracellular proteases and uses of such compositions. In accordance with one aspect of the present invention,
10 there is provided a plant extract that inhibits the activity of at least one extracellular protease secreted by mammalian skin cells.

In accordance with another aspect, there is provided a cosmetic composition comprising one or more plant extract of the invention and a cosmetically acceptable diluent, excipient or carrier.

In accordance with another aspect, there is provided a pharmaceutical composition comprising a
15 therapeutically effective amount of one or more plant extract of the invention and a pharmaceutically acceptable diluent, excipient or carrier.

In accordance with another aspect, there is provided a method of inhibiting one or more extracellular protease secreted by mammalian skin cells, comprising administering to a mammal an effective amount of one or more plant extract of the invention.

20 In accordance with another aspect of the present invention, there is provided a method of slowing down, inhibiting or preventing one or more structural change in the skin of a mammal comprising administering to a mammal an effective amount of one or more plant extract, wherein said one or more plant extract is capable of inhibiting the activity of at least one extracellular protease secreted by mammalian skin cells.

In accordance with another aspect of the present invention, there is provided a process for preparing a sub-library of plant extracts that are capable of slowing down, inhibiting or preventing structural changes in the skin of a mammal, said process comprising:

- (a) harvesting plant material from selected plants;
- 5 (b) contacting said plant material with a solvent to provide a plurality of potential extracts;
- (c) analysing each potential extract for inhibitory activity against at least one extracellular protease;
- (d) selecting those potential extracts that are capable of inhibiting the activity of at
10 least one extracellular protease to provide a library of extracts;
- (e) analysing the ability of each extract in said library to slow down, inhibit or prevent breakdown of a component of the extracellular matrix or endothelial cell migration, and
- 15 (f) selecting those extracts that are capable of slowing down, inhibiting or preventing breakdown of a component of the extracellular matrix or endothelial cell migration to provide a sub-library of plant extracts.

In accordance with another aspect of the present invention, there is provided a plant extract produced by the above process.

BRIEF DESCRIPTION OF THE FIGURES

20 **Figure 1** presents an overview of a procedure that can be followed in accordance with one embodiment of the invention in order to generate plant extracts, each of which is derived from solid plant material;

Figure 2 describes in further detail, the procedure of Figure 1;

25 **Figure 3** presents an overview of a commercial procedure that can be followed to prepare plant extracts based on the procedure of Figure 1;

Figure 4 shows the effect of a plant extract of the invention derived from *Rheum-rhabarbarum* on cord formation, (a) untreated cells; (b) cells treated with a positive control; (c) cells treated with an extract of the invention (1X concentration), and (d) cells treated with an extract of the invention (2X concentration);

- 5 **Figure 5** presents an overview of a procedure that can be followed in one embodiment of the present invention in order to generate plant extracts, each of which is derived from solid plant material; and

Figure 6 describes in further detail, the procedure of **Figure 5**.

DETAILED DESCRIPTION OF THE INVENTION

- 10 As described above, mammalian skin is composed of a number of layers of cells embedded in an extracellular matrix (the ECM), which provides structure to the skin. The ECM comprises a number of polymeric structural components including collagen, elastin and fibronectin. Dispersed within the ECM are various types of cells, including fibroblasts and immune cells, which secrete into the ECM extracellular proteases (EPs) that are capable of degrading the
- 15 structural components of the ECM. The ECM of the skin is in a constant state of flux, or turnover, which is tightly regulated and mediated in part by the secreted EPs. A shift in this turnover to an increased rate in the breakdown of one or more ECM structural components, such as collagen(s) or elastin, results in an increased degradation of the ECM and undesirable structural changes in the skin itself. Undesirable skin structural changes include, for example,
- 20 abnormal migration of cells within the skin (such as that which occurs during angiogenesis or inflammation), wrinkling and/or sagging of the skin, loss of elasticity, redness, inflammation, formation of lesions, thinning of the epithelium, or various combinations thereof. Shifts in the balance of ECM turnover can occur as a consequence of a disease condition or of exposure of the skin to harmful elements (such as UV irradiation), or they can occur naturally, for example, as
- 25 part of the aging process.

The present invention provides for extracts from plant material and semi-purified/purified molecules or compounds prepared from the extracts that are capable of inhibiting one or more of

the EPs secreted into the ECM of mammalian skin. Thus, one embodiment of the invention provides for extracts and semi-purified/purified molecules or compounds prepared from the extracts that are capable of attenuating undesirable EP-mediated ECM degradation in the skin and structural changes in the skin associated therewith. EP-mediated ECM degradation refers to the breakdown of one or more component of the ECM surrounding the cells of mammalian skin including, for example, collagen, elastin, fibrillin and/or fibronectin.

The extracts and semi-purified/purified molecules of the invention can be administered to a subject in order to attenuate structural changes in the skin and thereby to improve the appearance of the skin. In contrast to the prior art, which teaches *in vitro* inhibition of extracellular proteases, the present invention provides for extracts that are capable of reaching the ECM of the skin in sufficient concentrations to inhibit EPs present therein and which are thus suitable for *in vivo* use.

The present invention further provides for methods of selecting and preparing the plant extracts and for methods of screening the extracts to determine their ability to inhibit the activity of one or more EP secreted by mammalian skin cells. The invention additionally provides for the purification or semi-purification of one or more molecules from the extract and for the use of the semi-purified/purified molecules, alone or in combination with an extract, to attenuate undesirable EP-mediated ECM degradation.

Definitions

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs.

The term "potential plants," as used herein, is intended to include all species of the Kingdom Plantae, including terrestrial, aquatic or other plants under the Division Chlorophyta, Division Rhodophora, Division Paeophyta, Division Bryophyta and Division Tracheophyta; Subdivision Lycopsidea, Subdivision Sphenopsida, Subdivision Pteropsida and Subdivision Spermopsida; Class Gymnospermae, Class Angiospermae, Subclass Dicotyledonidae and Subclass Monocotyledonidae. In general terms, all plants, herbs, and lower plants such as fungi and algae are considered to be potential plants in accordance with the present invention.

The term "plant material," as used herein, refers to any part or parts of a plant taken either individually or in a group. Examples include, but are not limited to, leaves, flowers, roots, seeds, stems, and other parts of a plant, including those plants described herein as potential plants of the invention.

5 The term "extracellular protease," as used herein, refers to an enzyme that is capable of degrading proteins (*i.e.* proteolysis) and which is secreted outside the cell or which exerts an effect outside the cell. The cell can be prokaryotic or eukaryotic. Examples of extracellular proteases (EPs) include, but are not limited to, matrix metalloproteinases (MMPs), cathepsins, elastase, plasmin, TPA, uPA, kallikrein, ADAMS family members, neprilysin, gingipain,
10 clostripain, thermolysin, serralyisin, and other bacterial and viral proteases. While cathepsins are typically present in the lysosome, many of the cathepsins have been shown to play a role in physiological and pathological events occurring extracellularly (Reinheckel T et al: Biol Chem 2001;382(5):735-741; Tepel C et al: J Cell Sci. 2000 Dec;113 Pt 24:4487-98). Proteases such as cathepsin that exert significant effects in the ECM are, therefore, considered to be extracellular
15 proteases in the context of the present invention.

The term "panel of extracellular proteases," refers to an array of distinct extracellular proteases that are used to perform routine assays to monitor the presence or absence of inhibitory activity throughout an extraction process of the invention. A panel typically comprises at least two proteases, but may for some purposes comprise as few as one protease. One skilled in the art
20 would appreciate that as high throughput screening techniques develop, one could routinely assay for the presence or absence of inhibitory activity against as many extracellular proteases as the technology permits.

The term "potential pre-extract," refers to a composition prepared by contacting a solvent with plant material following the procedures described herein, which has not yet been
25 determined to possess inhibitory activity against one or more extracellular protease.

The term "potential extract," as used herein, refers to a potential pre-extract that has been subjected to one or more separation and/or purification step.

The term "extract of the invention," as used herein, refers to a composition prepared by

contacting a solvent with plant material following the procedures described herein, which demonstrates inhibitory activity against one or more extracellular protease secreted by mammalian skin cells.

5 The term "protease inhibitor," as used herein, refers to a molecule or compound that attenuates the proteolytic activity of proteases. A protease inhibitor may or may not be proteinaceous.

The term "stressor," as used herein, refers to a factor, such as a physical factor, a chemical compound, or a biological agent that is used to activate a defence response in a plant and thereby elicit production of extracellular protease inhibitors. Elicitors and inducers are also considered to be stressors.

10 The term "substantially purified" or "substantially pure" or "isolated," when used in reference to a molecule or molecules having protease inhibitor activity, refers to a form of the molecule(s) that is relatively free of proteins, nucleic acids, lipids, carbohydrates or other materials with which it is naturally associated in a plant. As disclosed herein, a plant extract of the invention is considered to be substantially purified, in that it is removed from the plant tissue from which it is
15 derived. In addition, molecules or compounds having protease inhibitor activity that are present within the extract can be further purified using routine and well-known methods such as those described herein. As such, a substantially pure protease inhibitor of the invention can constitute at least about one or a few percent of a sample, for example, at least about five percent of a sample. In one embodiment, the substantially pure protease inhibitor constitutes at least about
20 twenty percent of a sample. In another embodiment, the protease inhibitor can be further purified to constitute at least about fifty percent of a sample. In a further embodiment, the protease inhibitor can be further purified to constitute at least about eighty percent of a sample. In other embodiments, the protease inhibitor can be further purified to constitute at least about ninety percent or at least about ninety-five percent or more of a sample. A determination that a protease
25 inhibitor of the invention is substantially pure can be made using methods such as those disclosed herein or otherwise known in the art, for example, by performing electrophoresis and identifying the particular molecule as a relatively discrete band.

The term "skin cell," as used herein, refers to a cell normally present within the skin of a mammal. "Skin" refers to the epidermis (including the stratum germinativum, stratum spinosum, stratum granulosum, stratum lucidum and stratum corneum), the dermis (including the papillary dermis and the reticular dermis) and the hypodermis. The term "skin cells" thus includes, but is not limited to, keratinocytes, fibroblasts, endothelial cells (including vascular endothelial cells), basal cells, granular cells, Merkel cells, melanocytes, Langerhans cells, leukocytes, mastocytes, nerve cells, adipose cells and macrophages.

The term "attenuate," as used herein, means to slow-down, inhibit or prevent.

The term "cell migration," as used herein, refers to the movement, typically abnormal, of a cell or cells from one locus to another. Examples of cell migration include the movement of cells through the ECM or basal lamina during angiogenesis.

As used herein, the term "about" refers to a +/-10% variation from the nominal value. It is to be understood that such a variation is always included in any given value provided herein, whether or not it is specifically referred to.

Other chemistry terms herein are used according to conventional usage in the art, as exemplified by The McGraw-Hill Dictionary of Chemical Terms (ed. Parker, S., 1985), McGraw-Hill, San Francisco).

PREPARATION OF PLANT EXTRACTS

Plant material suitable for use in preparing an extract of the invention is derived from a "potential plant." Potential plants include all species of the Kingdom Plantae, including terrestrial, aquatic or other plants that can be subjected to the methodology described herein in order to generate an extract that can be tested against a panel of extracellular proteases. Those plants which yield an extract demonstrating inhibitory activity against at least one extracellular protease secreted by mammalian skin cells are considered to be plants and extracts comprising the subject matter of the invention.

Methods of preparing plant extracts have been described in detail in International Patent Application PCT/CA02/00285 (Publication No. WO 02/06992) and are suitable for use in the preparation of the plant extracts of the present invention. Other methods are described herein. Exemplary methods of preparation are provided in Figures 1 and 5 and begin with the selection of a plant species. The selected plant can be subjected to a pre-harvest treatment, for example treatment with water, or treatment with water in addition to a stressor or a combination of stressors if desired. The plant can be treated for storage and stored prior to extraction or it can be used directly. The plant material is next treated with a solvent after which the liquid is separated from the solid material, wherein the liquid becomes Pre-Extract A. The solid S2 can be further treated with a second solvent and subsequent solvents if desired.

Potential Plants

Examples of potential plants include, but are not limited to, those belonging to the following classifications: Superdivision Spermatophyta - Seed plants; Division Coniferophyta - Conifers; Class Pinopsida, Order Pinales; Family Araucariaceae - Araucaria family; Family Cephalotaxaceae - Plum Yew family; Family Cupressaceae - Cypress family; Family Pinaceae - Pine family; Family Podocarpaceae - Podocarpus family; Family Taxodiaceae - Redwood family; Order Taxales, Family Taxaceae - Yew family; Division Cycadophyta - Cycads, Class Cycadopsida, Order Cycadales, Family Cycadaceae - Cycad family; Family Zamiaceae - Sago-palm family; Division Ginkgophyta - Ginkgo, Class Ginkgoopsida, Order Ginkgoales, Family Ginkgoaceae - Ginkgo family; Division Gnetophyta - Mormon tea and other gnetophytes, Class Gnetopsida, Order Ephedrales, Family Ephedraceae - Mormon-tea family; Order Gnetales, Family Gnetaceae - Gnetum family; Division Magnoliophyta - Flowering plants, Class Liliopsida - Monocotyledons, Subclass Alismatidae, Order Alismatales, Family Alismataceae - Water-plantain family, Family Butomaceae - Flowering Rush family, Family Limnocharitaceae - Water-poppy family; Order Hydrocharitales, Family Hydrocharitaceae - Tape-grass family; Order Najadales, Family Aponogetonaceae - Cape-pondweed family, Family Cymodoceaceae - Manatee-grass family, Family Juncaginaceae - Arrow-grass family, Family Najadaceae - Water-nymph family, Family Posidoniaceae - Posidonia family, Family Potamogetonaceae - Pondweed family, Family Ruppiaceae - Ditch-grass family, Family Scheuchzeriaceae - Scheuchzeria

family, Family Zannichelliaceae - Horned pondweed family, Family Zosteraceae - Eel-grass family; Subclass Arecidae, Order Arales, Family Acoraceae - Calamus family, Family Araceae - Arum family, Family Lemnaceae - Duckweed family; Order Arecales, Family Arecaceae - Palm family; Order Cyclanthales, Family Cyclanthaceae - Panama Hat family; Order Pandanales,

5 Family Pandanaceae - Screw-pine family; Subclass Commelinidae, Order Commelinales, Family Commelinaceae - Spiderwort family, Family Mayacaceae - Mayaca family, Family Xyridaceae - Yellow-eyed Grass family; Order Cyperales, Family Cyperaceae - Sedge family, Family Poaceae - Grass family; Order Eriocaulales, Family Eriocaulaceae - Pipewort family; Order Juncales, Family Juncaceae - Rush family; Order Restionales, Family Joinvilleaceae - Joinvillea family;

10 Order Typhales, Family Sparganiaceae - Bur-reed family, Family Typhaceae - Cat-tail family; Subclass Liliidae, Order Liliales, Family Agavaceae - Century-plant family, Family Aloeaceae - Aloe family, Family Dioscoreaceae - Yam family, Family Haemodoraceae - Bloodwort family, Family Hanguanaceae - Hanguana family, Family Iridaceae - Iris family, Family Liliaceae - Lily family, Family Philydraceae - Philydraceae family, Family Pontederiaceae - Water-Hyacinth

15 family, Family Smilacaceae - Catbrier family, Family Stemonaceae - Stemona family, Family Taccaceae - Tacca family; Order Orchidales, Family Burmanniaceae - Burmannia family, Family Orchidaceae - Orchid family; Subclass Zingiberidae, Order Bromeliales, Family Bromeliaceae - Bromeliad family; Order Zingiberales, Family Cannaceae - Canna family, Family Costaceae - Costus family, Family Heliconiaceae - Heliconia family, Family Marantaceae - Prayer-Plant

20 family, Family Musaceae - Banana family, Family Zingiberaceae - Ginger family; Class Magnoliopsida - Dicotyledons, Subclass Asteridae, Order Asterales, Family Asteraceae - Aster family; Order Callitrichales, Family Callitrichaceae - Water-starwort family, Family Hippuridaceae - Mare's-tail family; Order Calycerales, Family Calyceraceae - Calycera family; Order Campanulales, Family Campanulaceae - Bellflower family, Family Goodeniaceae -

25 Goodenia family, Family Sphenocleaceae - Sphenoclea family; Order Dipsacales, Family Adoxaceae - Moschatel family, Family Caprifoliaceae - Honeysuckle family, Family Dipsacaceae - Teasel family, Family Valerianaceae - Valerian family; Order Gentianales, Family Apocynaceae - Dogbane family, Family Asclepiadaceae - Milkweed family, Family Gentianaceae - Gentian family, Family Loganiaceae - Logania family; Order Lamiales, Family

30 Boraginaceae - Borage family, Family Lamiaceae - Mint family, Family Lennoaceae - Lennea family, Family Verbenaceae - Verbena family; Order Plantaginales, Family Plantaginaceae -

- Plantain family; Order Rubiales, Family Rubiaceae - Madder family; Order Scrophulariales, Family Acanthaceae - Acanthus family, Family Bignoniaceae - Trumpet-creeper family, Family Buddlejaceae - Butterfly-bush family, Family Gesneriaceae - Gesneriad family, Family Lentibulariaceae - Bladderwort family, Family Myoporaceae - Myoporum family, Family
- 5 Oleaceae - Olive family, Family Orobanchaceae - Broom-rape family, Family Pedaliaceae - Sesame family, Family Scrophulariaceae - Figwort family; Order Solanales, Family Convolvulaceae - Morning-glory family, Family Cuscutaceae - Dodder family, Family Fouquieriaceae - Ocotillo family, Family Hydrophyllaceae - Waterleaf family, Family Menyanthaceae - Buckbean family, Family Polemoniaceae - Phlox family, Family Solanaceae -
- 10 Potato family; Subclass Caryophyllidae, Order Caryophyllales, Family Achatocarpaceae - Achatocarpus family, Family Aizoaceae - Fig-marigold family, Family Amaranthaceae - Amaranth family, Family Basellaceae - Basella family, Family Cactaceae - Cactus family, Family Caryophyllaceae - Pink family, Family Chenopodiaceae - Goosefoot family, Family Molluginaceae - Carpet-weed family, Family Nyctaginaceae - Four o'clock family, Family
- 15 Phytolaccaceae - Pokeweed family, Family Portulacaceae - Purslane family; Order Plumbaginales, Family Plumbaginaceae - Leadwort family; Order Polygonales, Family Polygonaceae - Buckwheat family; Subclass Dilleniidae, Order Batales, Family Bataceae - Saltwort family; Order Capparales, Family Brassicaceae - Mustard family, Family Capparaceae - Caper family, Family Moringaceae - Horse-radish tree family, Family Resedaceae - Mignonette
- 20 family; Order Diapensiales, Family Diapensiaceae - Diapensia family; Order Dilleniales, Family Dilleniaceae - Dillenia family, Family Paeoniaceae - Peony family; Order Ebenales, Family Ebenaceae - Ebony family, Family Sapotaceae - Sapodilla family, Family Styracaceae - Storax family, Family Symplocaceae - Sweetleaf family; Order Ericales, Family Clethraceae - Clethra family, Family Cyrillaceae - Cyrilla family, Family Empetraceae - Crowberry family, Family
- 25 Epacridaceae - Epacris family, Family Ericaceae - Heath family, Family Monotropaceae - Indian Pipe family, Family Pyrolaceae - Shinleaf family; Order Lecythidales, Family Lecythidaceae - Brazil-nut family; Order Malvales, Family Bombacaceae - Kapok-tree family, Family Elaeocarpaceae - Elaeocarpus family, Family Malvaceae - Mallow family, Family Sterculiaceae - Cacao family, Family Tiliaceae - Linden family; Order Nepenthales, Family Droseraceae -
- 30 Sundew family, Family Nepenthaceae - East Indian Pitcher-plant family, Family Sarraceniaceae - Pitcher-plant family; Order Primulales, Family Myrsinaceae - Myrsine family, Family

- Primulaceae - Primrose family, Family Theophrastaceae - Theophrasta family; Order Salicales, Family Salicaceae - Willow family; Order Theales, Family Actinidiaceae - Chinese Gooseberry family, Family Caryocaraceae - Souari family, Family Clusiaceae - Mangosteen family, Family Dipterocarpaceae - Meranti family, Family Elatinaceae - Waterwort family, Family
- 5 Marcgraviaceae - Shingle Plant family, Family Ochnaceae - Ochna family, Family Theaceae - Tea family; Order Violales, Family Begoniaceae - Begonia family, Family Bixaceae - Lipstick-tree family, Family Caricaceae - Papaya family, Family Cistaceae - Rock-rose family, Family Cucurbitaceae - Cucumber family, Family Datisceae - Datisca family, Family Flacourtiaceae - Flacourtia family, Family Frankeniaceae - Frankenia family, Family Loasaceae - Loasa family,
- 10 Family Passifloraceae - Passion-flower family, Family Tamaricaceae - Tamarix family, Family Turneraceae - Turnera family, Family Violaceae - Violet family; Subclass Hamamelidae, Order Casuarinales, Family Casuarinaceae - She-oak family; Order Fagales, Family Betulaceae - Birch family, Family Fagaceae - Beech family; Order Hamamelidales, Family Cercidiphyllaceae - Katsura-tree family, Family Hamamelidaceae - Witch-hazel family, Family Platanaceae - Plane-tree family; Order Juglandales, Family Juglandaceae - Walnut family; Order Leitneriales, Family
- 15 Leitneriaceae - Corkwood family; Order Myricales, Family Myricaceae - Bayberry family; Order Urticales, Family Cannabaceae - Hemp family, Family Cecropiaceae - Cecropia family, Family Moraceae - Mulberry family, Family Ulmaceae - Elm family, Family Urticaceae - Nettle family; Subclass Magnoliidae, Order Aristolochiales, Family Aristolochiaceae - Birthwort family; Order
- 20 Illiciales, Family Illiciaceae - Star-anise family, Family Schisandraceae - Schisandra family; Order Laurales, Family Calycanthaceae - Strawberry-shrub family, Family Hernandiaceae - Hernandia family, Family Lauraceae - Laurel family, Family Monimiaceae - Monimia family; Order Magnoliales, Family Annonaceae - Custard-apple family, Family Canellaceae - Canella family, Family Magnoliaceae - Magnolia family, Family Myristicaceae - Nutmeg family, Family
- 25 Sonneratiaceae - Sonneratia family, Family Winteraceae - Wintera family; Order Nymphaeales, Family Cabombaceae - Water-shield family, Family Ceratophyllaceae - Hornwort family, Family Nelumbonaceae - Lotus-lily family, Family Nymphaeaceae - Water-lily family; Order Papaverales, Family Fumariaceae - Fumitory family, Family Papaveraceae - Poppy family; Order Piperales, Family Chloranthaceae - Chloranthus family, Family Piperaceae - Pepper
- 30 family, Family Saururaceae - Lizard's-tail family; Order Ranunculales, Family Berberidaceae - Barberry family, Family Lardizabalaceae - Lardizabala family, Family Menispermaceae -

- Moonseed family, Family Ranunculaceae - Buttercup family, Family Sabiaceae - Sabia family;
 Subclass Rosidae, Order Apiales, Family Apiaceae - Carrot family, Family Araliaceae - Ginseng
 family; Order Celastrales, Family Aquifoliaceae - Holly family, Family Celastraceae -
 Bittersweet family, Family Corynocarpaceae - Karaka family, Family Hippocrateaceae -
 5 Hippocratea family, Family Icacinaceae - Icacina family, Family Stackhousiaceae - Stackhousia
 family; Order Cornales, Family Cornaceae - Dogwood family, Family Garryaceae - Silk Tassel
 family, Family Nyssaceae - Sour Gum family; Order Euphorbiales, Family Buxaceae - Boxwood
 family, Family Euphorbiaceae - Spurge family, Family Simmondsiaceae - Jojoba family; Order
 10 Fabales, Family Fabaceae - Pea family; Order Geraniales, Family Balsaminaceae - Touch-me-
 not family, Family Geraniaceae - Geranium family, Family Limnanthaceae - Meadow-Foam
 family, Family Oxalidaceae - Wood-Sorrel family, Family Tropaeolaceae - Nasturtium family;
 Order Haloragales, Family Gunneraceae - Gunnera family, Family Haloragaceae - Water Milfoil
 family; Order Linales Family Erythroxylaceae - Coca family, Family Linaceae - Flax family;
 Order Myrtales, Family Combretaceae - Indian Almond family, Family Lythraceae - Loosestrife
 15 family, Family Melastomataceae - Melastome family, Family Myrtaceae - Myrtle family, Family
 Onagraceae - Evening Primrose family, Family Punicaceae - Pomegranate family, Family
 Thymelaeaceae - Mezereum family, Family Trapaceae - Water Chestnut family; Order
 Podostemales, Family Podostemaceae - River-weed family; Order Polygalales, Family
 Krameriaceae - Krameria family, Family Malpighiaceae - Barbados Cherry family, Family
 20 Polygalaceae - Milkwort family; Order Proteales, Family Proteaceae - Protea family; Order
 Rafflesiales, Family Rafflesiaceae - Rafflesia family; Order Rhamnales, Family Elaeagnaceae -
 Oleaster family, Family Rhamnaceae - Buckthorn family, Family Vitaceae - Grape family; Order
 Rhizophorales, Family Rhizophoraceae - Red Mangrove family; Order Rosales, Family
 Brunelliaceae - Brunellia family, Family Chrysobalanaceae - Cocoa-plum family, Family
 25 Connaraceae - Cannarus family, Family Crassulaceae - Stonecrop family, Family
 Crossosomataceae - Crossosoma family, Family Cunoniaceae - Cunonia family, Family
 Grossulariaceae - Currant family, Family Hydrangeaceae - Hydrangea family, Family
 Pittosporaceae - Pittosporum family Family Rosaceae - Rose family, Family Saxifragaceae -
 Saxifrage family, Family Surianaceae - Suriana family; Order Santalales, Family
 30 Balanophoraceae - Balanophora family, Family Eremolepidaceae - Catkin-mistletoe family,
 Family Loranthaceae - Showy Mistletoe family, Family Olacaceae - Olax family, Family

Santalaceae - Sandalwood family, Family Viscaceae - Christmas Mistletoe family; Order Sapindales, Family Aceraceae - Maple family, Family Anacardiaceae - Sumac family, Family Burseraceae - Frankincense family, Family Hippocastanaceae - Horse-chestnut family, Family Meliaceae - Mahogany family, Family Rutaceae - Rue family, Family Sapindaceae - Soapberry family, Family Simaroubaceae - Quassia family, Family Staphyleaceae - Bladdernut family, Family Zygophyllaceae - Creosote-bush family.

In one embodiment, potential plants comprise: *Abelmoschus esculentus*; *Abies balsamea*; *Abies lasiocarpa*; *Achillea millefolium*; *Achillea tomentosa*; *Aconitum napellus*; *Aconitum* spp.; *Acorus calamus*; *Actaea racemosa*; *Actinidia arguta*; *Actinidia chinensis*; *Adiantum pedatum*; *Adiantum tenerum*; *Aesculus hippocastanum*; *Aframomum melegueta*; *Agaricus bisporus*; *Agastache foeniculum*; *Ageratum conyzoides*; *Agrimonia eupatoria*; *Agropyron cristatum*; *Agropyron repens*; *Agrostis alba*; *Agrostis stolonifera*; *Alcea rosea*; *Alchemilla mollis*; *Alkanna tinctoria*; *Allium ampeloprasum*; *Allium cepa*; *Allium fistulosum*; *Allium grande*; *Allium porrum*; *Allium sativum*; *Allium schoenoprasum*; *Allium tuberosum*; *Allium victorialis*; *Aloe vera*; *Alpinia officinarum*; *Althaea officinalis*; *Amaranthus caudatus*; *Amaranthus retroflexus*; *Amaranthus tricolor*; *Ambrosia artemisiifolia*; *Amelanchier alnifolia*; *Amelanchier canadensis*; *Amelanchier sanguinea*; *Amelanchier sanguinea* x *A. laevis*; *Amsonia tabernaemontana*; *Ananas comosus*; *Anaphalis margaritacea*; *Anethum graveolens*; *Angelica archangelica*; *Angelica dahurica*; *Angelica sinensis*; *Anthemis tinctoria*; *Anthoxanthum odoratum*; *Anthriscus cerefolium*; *Anthurium guildingii*; *Apium graveolens*; *Apocynum cannabinum*; *Arachis hypogaea*; *Aralia cordata*; *Aralia nudicaulis*; *Arctium lappa*; *Arctium minus*; *Arctostaphylos uva-ursi*; *Armoracia rusticana*; *Aronia melanocarpa*; *Aronia* x *prunifolia*; *Arrhenatherum elatius*; *Artemisia abrotanum*; *Artemisia absinthium*; *Artemisia dracunculus*; *Artemisia ludoviciana*; *Artemisia vulgaris*; *Asarum europaeum*; *Asclepias incarnata*; *Asclepias tuberosa*; *Asparagus officinalis*; *Aster* spp.; *Astilbe* x *arendsii*; *Astilboides tabularis*; *Athyrium asperum*; *Atriplex hortensis*; *Atropa belladonna*; *Avena sativa*; *Averrhoa carambola*; *Baptisia tinctoria*; *Beckmannia eruciformis*; *Begonia convolvulacea*; *Begonia eminii*; *Begonia glabra*; *Begonia mannii*; *Begonia polygonoides*; *Bellis perennis*; *Berberis vulgaris*; *Beta vulgaris*; *Betula alleghaniensis*; *Betula glandulosa*; *Boesenbergia rotunda*; *Boletus edulis*; *Borago officinalis*; *Brassica cepticepa*; *Brassica juncea*; *Brassica napus*; *Brassica nigra*; *Brassica oleracea*; *Brassica rapa*; *Bromus*

inermis; *Buddleja davidii*; *Bupleurum falcatum*; *Butomus umbellatus*; *Caladium* spp.;
Calamagrostis arundiflora; *Calamintha nepeta*; *Calendula officinalis*; *Camellia sinensis*;
Campanula rapunculus; *Canna indica*; *Cantharellus cibarius*; *Capsella bursa-pastoris*; *Capsicum*
annuum; *Capsicum frutescens*; *Carex morrowii*; *Carica papaya*; *Carthamus tinctorius*; *Carum*
 5 *carvi*; *Carya cordiformis*; *Castanea* spp.; *Centaurea solstitialis*; *Cerastium tomentosum*;
Chaerophyllum bulbosum; *Chamaemelum nobile*; *Chelidonium majus*; *Chenopodium album*;
Chenopodium bonus-henricus; *Chenopodium quinoa*; *Chrysanthemum coronarium*; *Cicer*
arietinum; *Cichorium endivia* subsp. *endivia*; *Cichorium intybus*; *Cinnamomum verum*; *Cirsium*
arvense; *Cissus discolor*; *Citrullus colocynthis*; *Citrullus lanatus*; *Citrus limettoides*; *Citrus*
 10 *limon*; *Citrus reticulata*; *Citrus sinensis*; *Citrus x paradisi*; *Clematis armandii*; *Clematis*
chiisanensis; *Coccoloba caracasana*; *Cocos nucifera*; *Coix lacryma-jobi*; *Colocasia* spp.;
Convallaria majalis; *Conyza canadensis*; *Corchorus olitorius*; *Coriandrum sativum*; *Cornus*
canadensis; *Cornus mas*; *Cosmos sulphureus*; *Cotinus coggygia*; *Crataegus sanguinea*;
Crataegus spp.; *Crataegus submollis*; *Crithmum maritimum*; *Cryptotaenia canadensis*; *Cucumis*
 15 *anguria*; *Cucumis melo*; *Cucumis metuliferus*; *Cucumis sativus*; *Cucurbita maxima*; *Cucurbita*
moschata; *Cucurbita pepo*; *Cullen corylifolium*; *Cuminum cyminum*; *Curcuma longa*; *Curcuma*
zedoaria; *Cydonia oblonga*; *Cymbopogon citratus*; *Cymbopogon martinii*; *Cynara cardunculus*
 subsp. *cardunculus*; *Cyperus esculentus*; *Dactylis glomerata*; *Datisca cannabina*; *Datura metel*;
Datura stramonium; *Daucus carota*; *Digitalis purpurea*; *Dimocarpus longan*; *Dioscorea batatas*;
 20 *Diospyros kaki*; *Dipsacus sativus*; *Dirca palustris*; *Dolichos lablab*; *Dryopteris filix-mas*;
Echinacea purpurea; *Echinochloa frumentacea*; *Eleusine coracana*; *Equisetum hyemale*; *Erigeron*
speciosus; *Eriobotrya japonica*; *Eruca vesicaria*; *Erysimum perofskianum*; *Eschscholzia*
californica; *Fagopyrum esculentum*; *Fagopyrum tataricum*; *Festuca rubra*; *Filipendula rubra*;
Filipendula ulmaria; *Filipendula vulgaris*; *Foeniculum vulgare*; *Forsythia x intermedia*;
 25 *Fortunella* spp.; *Fragaria x ananassa*; *Frangula alnus*; *Fucus vesiculosus*; *Fumaria officinalis*;
Galinsoga quadriradiata; *Galium odoratum*; *Gaultheria hispidula*; *Gaultheria procumbens*;
Genista multibracteata; *Gentiana lutea*; *Gentiana macrophylla*; *Geum rivale*; *Ginkgo biloba*;
Glechoma hederacea; *Glyceria maxima*; *Glycine max*; *Glycyrrhiza glabra*; *Gossypium*
herbaceum; *Guizotia abyssinica*; *Hamamelis virginiana*; *Hedeoma pulegioides*; *Hedychium* spp.;
 30 *Helianthus annuus*; *Helianthus strumosus*; *Helianthus tuberosus*; *Helichrysum angustifolium*;
Helichrysum thianschanicum; *Heliotropium arborescens*; *Helleborus niger*; *Herba schizonepetae*;

Hibiscus cannabinus; Hordeum hexastichon; Hordeum vulgare; Hordeum vulgare subsp. vulgare;
 Houttuynia cordata; Humulus lupulus; Hydrastis canadensis; Hylotelephium spp.; Hymenoxys
 hoopesii; Hyoscyamus niger; Hypericum henryi; Hypericum perforatum; Hypericum spp.;
 Hypomyces lactiflorum; Hyssopus officinalis; Iberis amara; Iberis sempervirens; Inula
 5 helenium; Ipomoea batatas; Iris versicolor; Isatis tinctoria; Jeffersonia diphylla; Juglans nigra;
 Juniperus communis; Kochia scoparia; Koeleria glauca; Kolkwitzia amabilis; Krameria
 lappacea; Lactuca sativa; Lactuca serriola; Laportea canadensis; Laserpitium latifolium;
 Lathyrus sativus; Lathyrus sylvestris; Laurus nobilis; Lavandula angustifolia; Lavandula
 latifolia; Ledum groenlandicum; Lens culinaris subsp. culinaris; Lentinus edodes; Leonurus
 10 cardiaca; Lepidium sativum; Leucanthemum vulgare; Levisticum officinale; Ligularia dentata;
 Ligustrum vulgare; Linaria vulgaris; Linderia benzoin; Linum usitatissimum; Litchi chinensis;
 Lolium multiflorum; Lolium perenne; Lonicera ramosissima; Lonicera syringantha; Lotus
 corniculatus; Lotus tetragonolobus; Lunaria annua; Lupinus polyphyllus; Luzula sylvatica;
 Lychnis chalcidonica; Lycopersicon esculentum; Lycopersicon pimpinellifolium; Lysimachia
 15 clethroides; Lythrum salicaria; Madia sativa; Magnolia stellata; Malus hupehensis; Malus
 prunifolia; Malus spp.; Malva moschata; Malva sylvestris; Mangifera indica; Manihot esculenta;
 Marrubium vulgare; Matricaria recutita; Matricaria spp.; Medicago sativa; Melaleuca
 alternifolia; Melilotus albus; Melilotus officinalis; Melissa officinalis; Mentha arvensis; Mentha
 pulegium; Mentha spicata; Mentha suaveolens; Mentha x piperita; Menyanthes trifoliata;
 20 Microlepis platyphylla; Miscanthus sacchariflorus; Miscanthus sinensis; Momordica charantia;
 Monarda didyma; Monarda fistulosa; Monarda spp.; Musa x paradisiaca; Myrica pensylvanica;
 Nasturtium officinale; Nepeta cataria; Nicotiana rustica; Nicotiana tabacum; Nigella sativa;
 Ocimum Basilicum; Oenothera biennis; Onobrychis viciifolia; Ophiopogon japonicus; Opuntia
 spp.; Origanum majorana; Origanum vulgare; Oryza sativa; Oxalis deppei; Oxyria digyna;
 25 Paeonia rubra; Paeonia spp.; Panax quinquefolius; Panicum miliaceum; Passiflora caerulea;
 Passiflora spp.; Pastinaca sativa; Pennisetum alopecuroides; Perilla frutescens; Persea americana;
 Petasites japonicus; Petroselinum crispum; Peucedanum cervaria; Peucedanum oreaselinum;
 Pfaffia paniculata; Phacelia tanacetifolia; Phalaris arundinacea; Phalaris canariensis; Phaseolus
 acutifolius; Phaseolus coccineus; Phaseolus vulgaris; Philadelphus coronarius; Phleum pratense;
 30 Phlox paniculata; Phoenix dactylifera; Physalis grisea; Physalis philadelphica; Physalis spp.;
 Physostegia virginiana; Phytolacca americana; Pimpinella anisum; Pisum sativum; Plantago

coronopus; *Plantago major*; *Plectranthus fruticosus*; *Plectranthus* spp.; *Pleurotus* spp.; *Plumbago zeylanica*; *Poa compressa*; *Poa pratensis*; *Podophyllum peltatum*; *Polygonatum odoratum*; *Polygonum aviculare*; *Polygonum chinense*; *Polygonum pensylvanicum*; *Polygonum persicaria*; *Pongamia pinnata*; *Pontederia cordata*; *Populus incrassata*; *Populus tremula*; *Populus x petrowskyana*; *Portulaca oleracea*; *Potentilla anserina*; *Poterium sanguisorba*; *Primula veris*; *Prunella vulgaris*; *Prunus armeniaca*; *Prunus cerasus*; *Prunus persica*; *Prunus* spp.; *Prunus tomentosa*; *Psathyrostachys juncea*; *Psidium guajava*; *Psidium* spp.; *Pteridium aquilinum*; *Pulmonaria officinalis*; *Pulmonaria saccharata*; *Punica granatum*; *Pyrus communis*; *Pyrus pyrifolia*; *Raphanus raphanistrum*; *Raphanus sativus*; *Rehmannia glutinosa*; *Reseda luteola*; *Reseda odorata*; *Rheum officinale*; *Rheum palmatum*; *Rheum x hybridum*; *Rhus aromatica*; *Rhus trilobata*; *Ribes grossularia*; *Ribes nigrum*; *Ribes rubrum*; *Ribes sylvestre*; *Ribes uva-crispa*; *Ribes x nidigrolaria*; *Ricinus communis*; *Rosa rugosa*; *Rosmarinus officinalis*; *Rubus allegheniensis*; *Rubus canadensis*; *Rubus idaeus*; *Rubus occidentalis*; *Rubus thibetanus*; *Rumex acetosa*; *Rumex acetosella*; *Rumex crispus*; *Rumex patientia*; *Rumex scutatus*; *Ruta graveolens*; *Saccharum officinarum*; *Salix purpurea*; *Salvia elegans*; *Salvia officinalis*; *Salvia sclarea*; *Salvia sylvestris*; *Sambucus canadensis*; *Sambucus ebulus*; *Sambucus nigra*; *Sanguisorba minor*; *Sanguisorba officinalis*; *Santolina chamaecyparissus*; *Saponaria officinalis*; *Satureja hortensis*; *Satureja montana*; *Satureja repandra*; *Scolymus hispanicus*; *Scorzonera hispanica*; *Scrophularia nodosa*; *Scutellaria lateriflora*; *Secale cereale*; *Sechium edule*; *Senecio vulgaris*; *Serenoa repens*; *Serratula tinctoria*; *Sesamum indicum*; *Setaria italica*; *Sidalcea* spp.; *Silene vulgaris*; *Silybum marianum*; *Sinapis alba* subsp. *alba*; *Sium sisarum*; *Solanum dulcamara*; *Solanum melongena*; *Solanum scabrum*; *Solanum tuberosum*; *Solidago canadensis*; *Solidago* spp.; *Solidago virgaurea*; *Solidago x hybrida*; *Sonchus oleraceus*; *Sorghum bicolor*; *Sorghum x drummondii*; *Spinacia oleracea*; *Stachys affinis*; *Stachys byzantina*; *Stachys macrantha*; *Stellaria graminea*; *Stellaria media*; *Stipa capillata*; *Symphytum officinale*; *Tamarindus indica*; *Tanacetum balsamita*; *Tanacetum balsamita* subsp. *balsamita*; *Tanacetum cinerariifolium*; *Tanacetum parthenium*; *Tanacetum vulgare*; *Taraxacum officinale*; *Tetradenia riparia*; *Teucrium chamaedrys*; *Thalictrum aquilegiifolium*; *Thlaspi arvense*; *Thuja occidentalis*; *Thymus fragrantissimus*; *Thymus herbarona*; *Thymus praecox* subsp. *arcticus*; *Thymus pseudolanuginosus*; *Thymus serpyllum*; *Thymus vulgaris*; *Thymus x citriodorus*; *Tiarella cordifolia*; *Tiarella* spp.; *Tragopogon porrifolius*; *Tragopogon* spp.; *Trichosanthes kirilowii*; *Trifolium hybridum*; *Trifolium*

- incarnatum; Trifolium pannonicum; Trifolium pratense; Trifolium repens; Trigonella foenum-graecum; Triticum aestivum; Triticum aestivum subsp. spelta; Triticum turgidum; Trollius x cultorum; Tropaeolum majus; Tsuga canadensis; Tsuga diversifolia; Tsuga mertensiana; Tussilago farfara; Typha latifolia; Ulmus americana; Urtica dioica; Uvularia perfoliata;
- 5 Vaccinium angustifolium; Vaccinium corymbosum; Vaccinium macrocarpon; Valeriana officinalis; Valerianella locusta; Veratrum viride; Verbascum thapsus; Verbena officinalis; Veronica officinalis; Viburnum opulus; Vicia faba; Vicia sativa; Vicia villosa; Vigna angularis; Vigna mungo; Vigna unguiculata; Vinca minor; Vitis spp.; Weigela coraeensis; Weigela hortensis; Withania somnifera; x Triticosecale spp.; Xanthium sibiricum; Xanthium strumarium;
- 10 Yucca filamentosa; Zea mays; Zingiber officinale; Achillea ptarmica; Ajuga reptans; Aster spp; Astilbe chinensis; Bergenia x schmidtii; Brassica chinensis; Butomus umbellatus; Buxus microphylla; Carpinus caroliniana; Centaurea dealbata; Chaenomeles x superba; Clematis alpina; Coreopsis verticillata; Cornus alba; Cornus sericea; Corylus maxima; Crambe cordifolia; Cyperus alternifolius; Dahlia spp.; Euphorbia amygdaloides; Fuchsia spp.; Fuchsia magellanica;
- 15 Galium aparine; Geranium sanguineum; Geranium phaeum; Geranium pratense; Geranium sanguineum; Geranium x cantabrigiense; Glaux Maritima; Hamamelis mollis; Hedychium coronarium; Helenium spp.; Herba Schizonepetae; Hosta sieboldiana; Hydrangea quercifolia; Ipomoea aquatica; Lamiastrum galeobdolon; Magnolia x loebneri; Malva verticillata; Matteuccia pennsylvanica; Microbiota decussata; Montia perfoliata; Ocimum tenuiflorum; Oenothera
- 20 fruticosa subsp fruticosa; Onoclea sensibilis; paeonia suffruticosa; Penstemon digitalis; Petasites japonicus; Physalis alkekengi; Pinus cembra; Pinus mugo; Potentilla fruticosa; Rhododendron spp.; ribes americanum; Rodgersia spp.; Rodgersia podophylla; Rubus arcticus; Rubus phoenicolasius; Rubus pubescens; Rudbeckia maxima; Sempervivum tectorum; Soleirolia soleirolii; Solidago caesia; Staphylea trifolia; Stephanandra incisa; Stewartia pseudocamellia;
- 25 Strelitzia reginae; Symphoricarpos orbiculatus; Symphoricarpos albus; Taxus x media; Vernonia gigantea; Veronica austriaca ssp teucrium; Veronica beccabunga and Viburnum plicatum.

In another embodiment, potential plants comprise: Abies cephalonica, Abies firma, Acer campestre, Acer mandshurica, Acer palmatum "burgundy," Acer tataricum, Acer truncatum, Acolypha hispida, Aconitum napellus, Actinidi colonicta, Actinidia chinensis, Actinidia colomicta, Adansonia digitata, Adiantum radiatum, Adiantum trapeziformis, Aechmea

30

luddemoniana, Aesculus hippocastanum, Aesculus hypocaustum, Aesculus waertilensis,
 Aesculus woerlitzensis, Aesopteria crasifolia, Agastache mexicana, Agatis robusta, Ageratum
 conizoides, Aglaonema commutatus, Agrimonia eupatoria, Ailantus altissima, Alchemilla sp.,
 Alium cernum (wild), Allium fistulosum, Allium nutans, Allium sp., Alum japonica,
 5 Amelanchier spicata, Amigdalus nana, Ananas comosus, Anemona japonica, Antericum
 ramosum, Anthurium altersianum, Anthurium andreanum, Anthurium elegans, Anthurium
 hookeri, Anthurium magnificum, Anthyrium filis-femina, Anthyrium nopponicum, Aralis
 mandshurica, Archirantus bidentata, Armoracea rusticana, Armoraica ristica, Artemisia
 dracunculus, Asimina triloba, Asorum canadensis, Asplenium australasicum, Aster-Nova
 10 anglicae, Astragalus sinicus, Atropa Belladonna, Austolachia australis, Bactisia australis,
 Barbaric sp., Berberis thunbergi, Berberis vulgaris, Bergenia crassifolia, Betula alba, Betula
 daurica, Betula nigra, Betula nigra (flower), Betula nigra (leaf), Betula pendula, Betula pendula,
 Bocconia cordata, Boechimeria boloba, Boxus sempervirens, Brassica juncea, Brassica napa,
 Bromelia balansae, Brugmansia graveolens (ralf), Brugmansia suaveolens, Brugmansia
 15 suaveolens (old), Brugmansia suaveolens (young), Buxus microphylla "japonica," Buxus
 microphylla "japonica," Cachris alpina, Cactus officinalis, Calathea zebrina, Calicatus floridus,
 Campanula carpatia, Capparis spinosa inermis, Carica papaya, Carlina acaulis, carpinifolia,
 Carum capsicum, Caryota ureus, Casia hebecarpa, Castanea sativa, Celosia cristata, Celtis
 occidentalis, Celtis occidentalis, Centauria maculata, Cerasus japonica, Cerasus maghabab,
 20 Ceratoramia mexicana, Chaeromelis superba, Charnaechrista fasciculata, Charnaeciparis
 pisifera, Chelidonium majus, Cistus incanus, Citinis cogriaria, Clematis rectae, Clerodendrum
 speciosissimum, Cobiaeum varilartum, Cocculus laurifolius, Comus mass, Convalaria majalis,
 Coronolla varia, Coryllus avelana, Corylus avelana, Cotoneaster fangianus, Cotoneaster
 horisontalis, Cotynus cogyria, Cramble cardifolia, Crataegus praegophyrum, Crategus
 25 macrophyllum, Crytomium fortunei, Cupress lusitanica, Cupressus sempervirens, Cupressus
 sempervirens, Cycas cirinalis, Cydonia oblonga, Cynnamonum zeylonicum, Darura stramonium,
 Deutria scabra, Dieffenbachia leopoldii, Dieffenbachia segiunae, Digitalis lutea, Diopiros kaka,
 Dracaena fragrans, Dracaena sp., Dryopteris filis-max, Echinops sphae, Eleagnus angustifolia,
 Eleagnus cernutata, Encephalaris horridum, Epilobium angustifolium, Equisetum variegatum,
 30 Eriobotria japonica, Erungium campestre, Erythrinia caffra, Erythrinia crista, Erythrinia
 glabelliferus, Eucaliptus rudis, Eucomia ulurifolia, Euonimus elata, Euonimus europea,

Euonomus verrucosa, Fagopyrum suffruticosum, Fagus silvatica, Fautenousus qualiqualia,
 Feucrium hamedris, Ficus benamina, Ficus benjaminii, Ficus elastica, Ficus purnila, Ficus
 religiosa, Ficus sp., Ficus triangularis, Filipendula ulmaria, Filipendula vulgrais, Foenix
 zeulonica, Forsithsia suspensa, Forsitsia europea, Fraxinus exelsior, Gallium sporium, Gardenia
 5 jasminoides, Gaultheria procumbens, Gentiana cruciata, Gentiana littorala, Gentiana
 macrophilla, Gentiana tibetica, Geranium maculata, Geum fanieri, Geum macrophyllum, Gingko
 biloba, Gnetum guemon, Gratiola officinalis, Gravilea robusta, Gravilea robusta, Gravilia
 robusta, Haser trilobum, Helianthus annus, Heraclelum pubescens, Hernerocalis spp.,
 Haemanthus katharina, Hissopus zeraucharicus, Hiuga reptans, Hosta fortuna, Hosta fortunaea,
 10 Hosta lancefolia, Hosta zibalda, Hydrocotile asiatica, Hydrocotile asiatica, Hyppoach
 rhamnoides, Ilex agnifolium, Ilex cornuta, Inula hilenium, Ipomea tricolor, Iris alida, Iris
 pseudocarpus, Jacobinia sp., Jasminum frutocarum, Juca sp., Juglands regia, Juniperus "blue
 pacific," Keyleiteria paniculata, Kolkwitzia amabilis, Korria japonica, Lal lab purpurea, Lapia
 dulcis, Larix dedidua, Laurus nobilis, Laurus nobilis, Lavandula officinalis, Lavandula
 15 officinalis, Leontopodium alpinum, Liatris spinata, Liclum barbatum, Ligustum vulgare, Linium
 hirsutum, Lippa dulcis, Livistona fragrans, Lobelia siphitica, Luglands nigra, Lupinus luteus,
 Lycodium japonicum, Magnolia cobus, Magnolia loebheril, Magnolia agrifolia, Matteucia
 strutioporis, Mespilus germanica, Metasequoia glyptotrobioides, Metrosideros excelsa,
 Microlepiea platphylla, Microsorium punctatum, Minispermum dauricum, Mirica certifera,
 20 Monstera deliciosa, Monstera pertusa, Morus alba, Murraya exotica, Musa textilis (Leaf), Musa
 textilis (Stem), Myrthus communis, Myrthus comunis, Nepeta cataria, Nicodemia diversifolia,
 Nicotiana tabacum, Olea europaea, Olea olcaster, Oreopanax capitata, Origanum vulgare,
 Osmanthus spp., Osmunda regalis, Osmundastrum claytonionum, Ostrea carpinifolia, Ostrea
 connote, Oxobachus nictogenea, Pachyra affinis, Paeonia daurica, Paeonia lactiflora, Paeonia
 25 suffructicisa, Parrotia persica, Parthenosicus tricuspidata, Pegamun hamalis, Pelagonium zonale,
 Pelargoniurn zonale, Pentaphylloides fruticosa, Phebodium aureum, Philodendron amurense,
 Phylidendron speciosus, Phyllanthus grandifolium, Phyllitis scolopendrium, Phymatosorus
 scolopendria, Physalis cretica, Picea schrenkiana, Pieras japonica, Pigelia pennata, Pinus
 bungiana, Pinus pinea, Pinus pumila, Pinus salinifolia, Pinus silvestris, Pinus sirtrobus, Pinus
 30 strobis, Piper chaba, Piper nigrum, Pithecelobium unguis, Pittisporum tibica, Plantago major,
 Plantago minor, Platanus acidentalis, Platicada grandiflora, Podocarpus spinulosus, Podophyllum

- amodii, Polygonum aviculare, Poligornun latifolia, Polygonium odoratum, Polygonum cuspidatum, Polymonium ceruleum, Polyschium braunii, Portulaca oleacea, Portulaca olleracea, Potentilla alba, Poterium sangiusorba, Princepia sp., Prunella vulgaris, Prunus cerasifera, Prunus serotica, Prunus xocane, Pseudotsuga menzisia, Psidium guajava, Psychotria
- 5 metbacteriodomasica, Psychotria nigropunctata, Pterigota alata, Puansetia sp., Pulmonaria molissima, Quercus castanufolia, Quercus imbricaria, Quercus nigra, Quercus robur "fastigiata," Quercus rubra, Quercus trojana, Ratibiunda columnus-Fera, Rauwolfia tetraphylla, Reseda luteola, Rhododendron spp., Rhus toxicodenta, Rimula japonica, Rosa cocanica, Rosa multiflora, Ruschia indurata, Ruta graveolens, Salis babilonics, Salix tamarisifolia, Sambucus niora,
- 10 Sanchezia nobilis, Schisandra chinensis, Scotch pine, Scutellaria certicola, Scutellarian altissima, Sedum album, Sedum telchium, Senecio platifilla, Senseviera sp., Seringa josiceae, Seruginea suffruticisa, Sesbania exaltata, Sesbania speciosa, Sibirea altaiensis, Siringa vulgaris, Sluffera sp., Sorbocotoneaster sp., Sorbus aucuparia, Sorbus cominicta, Spartina potentiflora, Spathiphyllum cochlearispaturn, Spathiphyllum grandiflorum, Stachis lanata, StePOCHlaena
- 15 tenuifolia, Sterulia elata, Stevartia coreana, Strelitzia reglinae, Sulda sanganea, Sundapsis spp., Symphitium officinalis, Syngonium aurutum, Syngonium podophyllum, Taccus bacata, Tagetes minuta, Talictrum minus, Talictrum sp., Tamarindus india, Tapeinochilos spectabilis, Taraxacum officinalis, Taxodium dixticum, Taxodium dixticum (Acetic acid), Taxodium dixticum (H₂O), Taxus cuspidata, Taxus hiksii, Taxus media, Tetraclinis articulata hinensis, Thalictum flavum,
- 20 Thuja occidentalis, Thuja occidentalis, Thymus camosus, Thymus carnosus, Thymus cretaceus, Thymus cytridorus "aureus," Thymus lemabarona, Thymus portugalense, Thymus praecox, Thymus praecox "arcticus," Thymus pseudolamginosus, Thymus puleglodes "lemons," Thymus puliglodes, Thymus serphylum, Thymus serphylum (wild), Thymus speciosa, Thymus thrasicus, Thymus vulgaris, Thymus vulgaris "argenteus," Thymus vulgaris "oregano," Thymus wooly,
- 25 Trambe pontica, Trevesia sungaica, Trifolium pratense, Tsuga canadensis "penola," Tuja orientalis "ellegantissima," Tula ocidentalis "columbia," Tulip tree, Turnera ulmifolia, Ulmus pumila, Uschusa sp., Valeriana officinalis, Veratrum nigrum, Verium oleander, Viburnum opulus, Vinca minor, Vincetocsicum officinalis, Vitis labrissa, Xanthosoma sagittifolium (leaf), Xanthosoma sagittifolium (stem), Xeupressocyparis deylandii, Yucca elephantipes, Zelcova and
- 30 Zingiber officinalis.

Groups of potential plants may also be selected based on their indigenous geographical regions. For example, one group of potential plants could comprise plants that are indigenous to arid regions, for example, those located between 35° north latitude and 35° south latitude. In accordance with another embodiment of the present invention, therefore, potential plants

5 comprise: the agave, Agavaceae, family including such members as: *Yucca elata*, *Y. breviflora*, *Agave deserti*, *A. chrysantha*, *Dasyllirion wheeleri*; the buckwheat, Polygonaceae, family, such as *Eriogonum fasciculatum*; the crowfoot, Ranunculaceae, family, such as *Delphinium scaposum*, *Anemone tuberosa* and *D. parishii*; the poppy, Papaveraceae, family, including *Platystemon californicus*, *Argemone pleiacantha*, *Corydalis aurea*, *Eschscholzia californica* and *Ar.*

10 *corymbosa*; members of the mustard, Cruciferae, family, such as *Dithyrea californica*, *Streptanthus carinatus* and *Lesquerella gordonii*; members of the legume, Leguminosae, family, such as *Acacia greggii*, *Prosopis velutina*, *A. constricta*, *Senna covesii*, *Cercidium floridum*, *C. microphyllum*, *Lotus humistratus*, *Krameria parvifolia*, *Parkinsonia aculeata*, *Calliandra eriophylla*, *Lupinus arizonicus*, *Olyneya tesota*, *Astragalus lentiginosus*, *Psoralea argophylla* and *Lupinus sparsiflorus*; members of the loasa family, Loasaceae, including *Mentzelia*

15 *involucrata*, *M. pumila* and *Mohavea confertiflora*; members of the cactus, Cactaceae, family, such as *Carnegiea gigantea*, *Opuntia leptocaulis*, *Ferocactus wislizenii*, *O. bigelovii*, *O. pheacantha*, *O. versicolor*, *O. fulgida*, *Echinocereus engelmannii*, *Mammillaria microcarpa*, *O. basilaris*, *Stenocereus thurberi*, *O. violacea*, *M. tetrandra*, *O. ramosissima*, *O. acanthocarpa*, *E.*

20 *pectinatus* and *O. arbuscula*; members of the evening primrose, Onagraceae, family, such as *Oenothera deltoides*, *Camissonia claviformis* and *Oe. primiveris*; members of the milkweed, Asclepiadaceae, family, including *Asclepias erosa*, *A. subulata* and *Sarcostemma cynanchoides*; members of the borage, Boraginaceae, family, such as *Cryptantha augusti folia* and *Amsinckia intermedia*; members of the sunflower, Compositae, family, including *Baccharis sarothroides*,

25 *Monoptilon bellioideum*, *Eriogonum divergens*, *Zinnia acerosa*, *Melampodium leucanthum*, *Chaenactis fremontii*, *Calycoses wrightii*, *Malacothrix californica*, *Helianthus annuus*, *H. niveus*, *Geraea canescens*, *Hymenoxys wislizenii*, *Encelia farinosa*, *Psilostrophe cooperi*, *Baileya multiradiata*, *Bebbia juncea*, *Senecio douglasii*, *Trixis californica*, *Machaeranthera tephrodes*, *Xylorhiza tortifolia*, *Cirsium neomexicanum*, *Antennaria parviflora* and *Ch. douglasii*; members of the

30 caltrop, Zygophyllaceae, family, including *Larrea tridentata* and *Kallstroemia grandiflora*; members of the mallow, Malvaceae, family, including *Hibiscus coulteri*, *H. denudatus* and

Sphaeralcea ambigua; members of the phlox, Polemoniaceae, family, such as Luanthus aureus; members of the unicorn plant, Martyniaceae, family, such as Proboscidea altheaefolia; members of the gourd, Cucurbitaceae, family, such as Cucurbita digitata; members of the lily, Lilaceae, family, including Calochortus kennedyi, Dichelostemma pulchellum, Allium macropetalum and
5 Hesperocallis indulata; members of the ocotillo, Fouquieriaceae, family, including Fouquieria splendens; members of the figwort, Scrophulariaceae, family, such as Castilleja sp., Penstemon parryi and Orthocarpus purpurascens; members of the acanthus, Acanthaceae, family, including Anisacanthus thurberi, Justicia californica and Ruellia nudiflora; members of the four o'clock, Nyctaginaceae, family, such as Allionia incarnata, Abronia villosa and Mirabilis multiflora;
10 members of the geranium, Geraniaceae, family, including Erodium cicutarium; members of the waterleaf, Hydrophyllaceae, family, such as Nama demissum, Phacelia bombycina and Ph. distans; members of the bignonia, Bignoniaceae, family, such as Chilopsis linearis; members of the vervain, Verbenaceae, family, including Glandularia gooddugii and Verbena neomexicana; members of the mint, Labiatae, family, such as Hyptis emoryi and Salvia columbariae; members
15 of the broomrape, Orobanchaceae, family, such as Orobanche cooperi; members of the portulaca, Portulacaceae, family, such as Talinum auriantiacum; members of the carpet-weed, Aizoaceae, family, such as Sesuvium verrucosum; members of the flax, Linaceae, family, such as Linum lewisii; members of the potato, Solanaceae, family, including Nicotiana trigonophylla and Physalis lobata; and members of the cochlospermum, Cochlospermaceae, family, such as
20 Amoreuxia palmatifida.

In accordance with one embodiment of the present invention, the potential plant is selected from the group comprising: Aconitum napellus, Acorus calamus, Agrostis alba, Alchemilla mollis, Allium cepa, Allium sativum, Allium tuberosum, Aloe vera, Ambrosia artemisiifolia, Anethum graveolens, Anthemis tinctoria, Aronia melanocarpa (Michx.) Ell., Aronia x prunifolia,
25 Artemisia dracunculus, Artemisia dracunlus, Avena sativa, Beta vulgaris, Beta vulgaris spp. Maritima, Beta vulgaris subsp. Vulgaris, Borago officinalis, Brassica napus, Brassica oleracea, Brassica rapa, Bromus inermis, Capsicum annuum, Cerastium tomentosum, Chaerophyllum bulbosum, Chenopodium quinoa, Chichorium endivia, Cirsium arvense, Citrullus lanatus, Cornus canadensis, Cynara cardunculus subsp. Cardunculus, Daucus carota, Dioscorea batatas,
30 Dolichos lablab, Fagopyrum esculentum, Fagopyrum tataricum, Foeniculum vulgare, Fragaria x

ananassa, Frangula alnus, Galinsoga quadriradiata, Glycine max, Glycyrrhiza glabra, Glycyrrhiza
 glabra, Hamamelis virginiana, Helianthus strumosus, Heliotropium arborescens, Hordeum
 vulgare subsp. Vulgare, Hypomyces lactiflorum, Juniperus communis, Kochia scoparia,
 Lactuca sativa, Lentinus edodes, Lotus corniculatus, Manihot esculenta, Matricaria recutita,
 5 Melilotus albus, Melissa officinalis, Mentha x piperita, Origanum majorana, Panax
 quinquefolius, Pastinaca sativa, Petroselinum crispum, Phalaris canariensis, Phaseolus vulgaris,
 Physalis philadelphica, Phytolacca decandra, Phytolacca decandra syn. P. americana, Pimpinella
 anisum, Potentilla anserina, Poterium sanguisorba, Pyrus communis, Raphanus raphanistrum,
 Rheum rhabarbarum, Ribes nigrum L., Ribes sylvestre, Rosmarinus officinalis, Rubus
 10 occidentalis, Rumex crispus, Rumex scutatus, Ruta graveolens, Salvia officinalis, Sambucus
 canadensis L., Saponaria officinalis L., Setaria italica, Solanum melongens, Sorghum dochna
 bicolor gr technicum, Stellaria media, Tanacetum cinerariifolium, Taraxacum officinale,
 Teucrium chamaedrys, Thymus fragrantissimus, Thymus praecox subsp. Arcticus, Thymus x
 citriodorus, Trifolium incarnatum, Tropaeolum majus, Tsuga diversifolia, Vaccinium
 15 angustifolium, Vitia sp., x Triticosecale spp., Zea mays and Zingiber officinale.

In accordance with yet another embodiment of the present invention, the potential plant is
 selected from the group comprising: Allium cepa, Allium sativum, Ambrosia artemisiifolia,
 Aronia x prunifolia, Artemisia dracunculus, Artemisia dracuncul, Avena sativa, Beta vulgaris,
 Brassica napus, Brassica oleracea, Brassica rapa, Bromus inermis, Chenopodium quinoa,
 20 Chenopodium quinoa subsp. Quinoa, Chichorium endivia, Cichorium endivia subsp. Endivia,
 Citrullus lanatus, Daucus carota, Dolichos lablab, Foeniculum vulgare, Glycyrrhiza glabra,
 Helianthus strumosus, Hypomyces lactiflorum, Lentinus edodes, Lotus corniculatus, Manihot
 esculenta, Matricaria recutita, Melilotus albus, Melissa officinalis, Phaseolus vulgaris, Physalis
 philadelphica, Pimpinella anisum, Pisum sativum, Raphanus raphanistrum, Rheum x hybridum
 25 (=Rheum rhabarbarum), Ribes sylvestre, Rubus occidentalis, Rumex crispus, Rumex scutatus,
 Setaria italica, Sorghum dochna bicolor gr technicum, Stellaria media, Tanacetum
 cinerariifolium, Taraxacum officinale, Thymus fragrantissimus, Thymus x citriodorus, Trifolium
 incarnatum, Tropaeolum majus, Tsuga canadensis, Tsuga diversifolia, Vaccinium angustifolium,
 x Triticosecale spp., Zea mays and Zingiber officinale.

In accordance with another embodiment of the present invention, the potential plant is selected from the group comprising: *Arctostaphylos uva-ursi*, *Beta vulgaris*, *Cornus sericea*, *Daucus carota*, *Euphorbia amygdaloides*, *Galinsoga quadriradiata*, *Gentiana lutea*, *Geranium sanguineum*, *Oenothera biennis*, *Potentilla fruticosa*, *Rodgersia* spp., *Rubus thibetanus*, *Rumex crispus* and *Vitia* sp.

Plant Stressors

If desired, potential plants may be subjected to a pre-harvest treatment, wherein the treatment can be water or water in combination with one or more stressor, elicitor, or inducer, prior to preparation of the extract. A pre-harvest treatment comprises contacting or treating a potential plant, or material from a potential plant, with one or more stressor, elicitor, or inducer. Examples of stressors, elicitors and inducers include, but are not limited to, chemical compounds, for example organic and inorganic acids, fatty acids, glycerides, phospholipids, glycolipids, organic solvents, amino acids and peptides, monosaccharides, oligosaccharides, polysaccharides and lipopolysaccharides, phenolics, alkaloids, terpenes and terpenoids, antibiotics, detergents, polyamines, peroxides, ionophores, etc.; subsection of the plant material to a physical treatment, such as ultraviolet radiation, sandblasting, low and high temperature stress, osmotic stress induced by salt or sugars, nutritional stress defined as depriving the plant of essential nutrients (e.g. nitrogen, phosphorus or potassium), in order to induce or elicit increased production of one or more chemicals. The one or more stressor (i.e. chemical compound or physical treatment) may be applied continuously or intermittently to the plant material, or the potential plant can be subjected to a variety of pre-harvest treatments and an extract prepared after each treatment. Various stressors and procedures for stressing plants prior to extract preparation have been described previously (see International Patent Application WO 02/06992) and are suitable for use in the present invention.

In one embodiment of the present invention, the potential plant is treated with one or more stressor selected from the group of: γ -linolenic acid, γ -linolenic acid lower alkyl esters, arachidonic acid and arachidonic acid lower alkyl esters. In another embodiment, the potential plant is treated with γ -linolenic acid or arachidonic acid. In a further embodiment, the plants are

subjected to a physical stress, such as sandblasting. In yet another embodiment, unstressed plants are used.

Various combinations of stressors and treatment regimes can also be employed to induce or enhance the production of one or more extracellular proteases in the plant material. One skilled
5 in the art would be able to determine from the results of the assay against the panel of extracellular proteases whether it is desirable to follow one or more than one of the stressor regimes.

Harvesting the Plant Material for Extraction and Optional Storage Treatment

The plant material may be used immediately after pre-harvest treatment, or it may be desirable to
10 store the plant material for a period of time prior to performing the extraction procedure(s). If desired, the plant material can be treated prior to storage, for example, by drying, freezing, lyophilising, or some combination thereof.

Following treatment to prepare the plant material for storage, the plant material may be stored for a period of time prior to being contacted with a first solvent. The storage time may be of various
15 durations, for example, the storage period may be between a few days and a few years. In one embodiment of the invention, the plant material is stored for a period of less than one week. In another embodiment, the plant material is stored for a period between one week to one month. In a further embodiment, the plant material is stored for a period of between one month to six months. In other embodiments, the plant material is stored for periods of between four months to
20 one year and for a period over one year in duration.

The Extraction Process

Various extraction processes are known in the art and can be employed in the methods of the present invention (see, for example, International Patent Application WO 02/06992).

In one embodiment of the present invention the plant material is subjected to an extraction
25 process as depicted in Figure 1. In accordance with this embodiment, three basic extraction processes are performed in sequence to generate potential pre-extracts A, B and C.

In other embodiments of the present invention, greater or fewer extraction processes are contemplated. For example, in an alternative embodiment, the plant material is subjected to an extraction process as depicted in Figure 5. In accordance with this embodiment, the plant material is subjected to two separate extraction processes concurrently resulting in two separate potential pre-extract A's.

Regardless of the number of extraction processes, the procedure for each extraction process entails contacting the solid plant material with a solvent with adequate mixing and for a period of time sufficient to ensure adequate exposure of the solid plant material to the solvent such that inhibitory activity present in the plant material can be taken up by the solvent. Typically, the extraction procedures are conducted over a period of time between about 10 minutes and about 24 hours at a temperature between about 4°C and about 50°C. Adequate contact of the solvent with the plant material can be encouraged by shaking the suspension. The liquid fraction is then separated from the solid (insoluble) matter resulting in the generation of two fractions: a liquid fraction, which is a potential pre-extract, and a solid fraction. Separation of the liquid and solid fractions can be achieved by one or more standard processes known to those skilled in the art.

In accordance with the embodiment depicted in Figure 1, the extraction process is then repeated with a second and a third solvent. Solvents A, B and C in Figure 1 generally represent separate classes of solvents, for example, aqueous, alcoholic and organic. The solvents can be applied in specific order, for example, a polar to non-polar order or in a non-polar to polar order.

Alternatively, the solvents can be applied in a random sequence. In all cases, however, the solid matter should be dried prior to contact with the subsequent solvent.

The plant material employed in the extraction process can be the entire potential plant, or it can be one or more distinct tissues from a plant, for example, leaves, seeds, roots, stems, flowers, or various combinations thereof. The plant material can be fresh, dried or frozen. If desired, the plant material can be treated prior to the extraction process in order to facilitate the extraction of the inhibitory activity. Typically such treatment results in the plant material being fragmented by some means such that a greater surface area is presented to the solvent. For example, the plant material can be crushed or sliced mechanically, using a grinder or other device to fragment the

plant parts into small pieces or particles, or the plant material can be frozen liquid nitrogen and then crushed or fragmented into smaller pieces.

The solvent used for each extraction process can be aqueous, alcoholic or organic, or a combination thereof. In one embodiment of the present invention, plant material is extracted with an aqueous solvent. In another embodiment, an aqueous solvent comprising an aqueous TRIS-HCl buffer at pH 6 – 8 for a period of between 30 minutes to 8 hours at a temperature between about 4 to about 50°C is used for the extraction.

In an alternate embodiment of the invention, plant material is extracted with an alcoholic solvent, such as ethanol, or methanol, or a combination of alcoholic solvents. In one embodiment, a combination of ethanol and methanol is used as the alcoholic solvent, wherein the range of ethanol:methanol is between about 50:50 and about 85:15. In a further embodiment, the plant material is contacted with an alcoholic solvent for a time period between about 10 minutes to one hour at a temperature between about 4 to about 25°C.

In an alternate embodiment, plant material is extracted with an alcoholic solvent in combination with a co-solvent, which may be aqueous or organic. In one embodiment, a combination of ethanol and water is used as the solvent, wherein the range of ethanol:water is between about 50:50 and about 85:15.

In an alternate embodiment, plant material is extracted with an organic solvent, such as diethylether, hexane, heptane, dichloromethane, or ethylacetate extract. In one embodiment, dichloromethane is used as the solvent and the plant material is shaken for one to twenty-four hours with the solvent.

Once the potential pre-extracts have been isolated, they can be tested directly (after being dissolved or dispersed in a suitable solvent) for their ability to inhibit extracellular protease activity, or they may be subjected to further procedures to generate a potential extract as described below and outlined in Figures 2 and 6. For example, the potential pre-extracts can be subjected to procedures to remove fatty acids or chlorophyll components that may interfere with the protease activity or other assays. Various procedures known in the art may be employed. In one embodiment, one or more additional partitioning step using an organic solvent, such as

hexane, heptane or ethyl acetate, is included. The liquid potential pre-extract can be concentrated and solubilised in an appropriate solvent prior to the one or more partitioning step, if desired.

The present invention contemplates that the extraction process may be carried out on various scales including known large, medium and small-scale methods of preparing extracts.

5 TESTING THE PLANT EXTRACTS

Determination of Extracellular Protease Inhibitory Activity in an Extract

As indicated above, the extracts of the present invention are capable of inhibiting one or more EP secreted by mammalian skin cells. Potential pre-extracts and extracts can be tested for their ability to inhibit EPs using a variety of techniques known in the art, including, but not limited to, those described herein. In the context of the present invention, a plant extract that decreases the activity of an EP by at least 20% is considered to be capable of inhibiting the activity of that protease.

Potential pre-extracts and extracts can be tested directly against one or more skin EP or they may be submitted to a preliminary screen, for example, against a panel of known EPs with those extracts that are capable of inhibiting at least one EP being selected for further testing. EPs that may be used in such a preliminary screening step include, but are not limited to, matrix metalloproteinases (MMPs), cathepsins, elastase, plasmin, TPA, uPA, kallikrein, ADAMS family members, neprilysin, gingipain, clostripain, thermolysin, serralyisin, and other bacterial and viral proteases.

EPs secreted by skin cells are known in the art and include, but are not limited to, MMPs (such as MMP-1, -2, -3, -8 and -9), cathepsins (such as cathepsins B, D, L and G), elastases, stromelysins, gelatinases and collagenases. Other EPs may be determined by future research to be secreted by skin cells and, as such, are considered to be skin EPs in the context of the present invention.

In order to determine whether the extracts inhibit a skin EP, the potential pre-extract or extract can be tested against an individual protease or against a panel comprising several proteases

known to be secreted by mammalian skin cells. For example, it may be useful to determine which potential pre-extracts/extracts are capable of inhibiting at least one human skin EP, or at least one collagenase, or at least one elastase. Thus, various panels of EPs may be designed for screening purposes that comprise those proteases of particular interest.

- 5 In accordance with one embodiment of the present invention, potential pre-extracts/extracts that are capable of inhibiting at least one human skin EP are selected. Human skin EPs include, but are not limited to, collagenases, gelatinases, stromelysins, elastase, and cathepsins, for example, MMP-1, MMP-2, MMP-3, MMP-9, cathepsin B, cathepsin D, cathepsin G, cathepsin L, and human leukocyte elastase (HLE).
- 10 As indicated above, a variety of methods and techniques for measuring the ability of the potential pre-extracts and/or potential extracts to inhibit the activity of EP(s) either qualitatively or quantitatively are known in the art. For example, there are currently several assays to measure the activity of MMPs, elastase and cathepsins (for a review of these methods, see Murphy and Crabbe, In Barrett (ed.) *Methods in Enzymology. Proteolytic Enzymes: Aspartic Acid and*
- 15 *Metallopeptidases*, New York: Academic Press, 1995, 248: 470), including the gelatinolytic assay (which is based on the degradation of radio-labelled type I collagen), the zymography assay (which is based on the presence of negatively-stained bands following electrophoresis through substrate-impregnated SDS polyacrylamide gels) and a microtitre plate assay developed by Pacmen *et al.*, (*Biochem. Pharm.* (1996) 52:105-111).
- 20 Other methods include those that employ auto-quenched fluorogenic substrates. Many fluorogenic substrates have been designed for quantification of the activity of MMPs, elastase, and cathepsins through fluorescent level variation measuring (reviewed by Nagase and Fields (1996) *Biopolymers* 40: 399-416). Another method of measuring EP activity makes use of the fluorescent activated substrate conversion (FASC) assay described in Canadian Patent No.
- 25 2,189,486 (1996) and in St-Pierre *et al.*, (1996) *Cytometry* 25: 374-380.

Various formats known in the art may be employed in the assays. For example, the potential pre-extract/extract may be tested against one or more proteases in a sequential fashion or it may be tested against a plurality of proteases, such as an array of EPs, simultaneously. The assays may

be adapted to high throughput in order to facilitate simultaneous testing of a potential pre-extract/extract against a plurality of proteases. High throughput techniques are constantly being developed and the use of such techniques to adapt the assays in the future is also contemplated by the present invention.

- 5 The assays may be conducted using purified or semi-purified proteases, or they may be conducted using cultures of cells that secrete EPs. Methods of isolating and purifying EPs are well known in the art. In addition, many EPs are commercially available (for example, from Sigma-Aldrich, St. Louis, MO and Calbiochem, San Diego, CA).

- Alternatively, the ability of potential pre-extracts and extracts to inhibit the activity of one or
10 more EP can be evaluated by contacting cell cultures with a potential pre-extract/extract. After an appropriate period of time, the cells are extracted, centrifuged and the proteolytic activity in the supernatant is measured. This method is useful in determining the ability of a pre-extract/extract to inhibit a set of proteases secreted by a particular cell line or combination of cell lines. For example, assays conducted with cell lines can be used to determine the ability of a pre-
15 extract/extract to inhibit proteases secreted by one or more cell lines derived from mammalian skin, such as keratinocytes or fibroblasts.

Skin Models

- As an extension of the cell culture assays described above, the extracts may be tested in an appropriate skin model for their ability to inhibit one or more EP. For example, an *in vitro*
20 human skin model can be employed to test the extract(s). Such models are typically constructed from human fibroblasts and keratinocytes by first forming a gel comprising human dermal fibroblasts and collagen. Cell culture medium is added and the gel incubated for a sufficient number of days to allow for fibroblast proliferation, and for collagen and protease synthesis and secretion into the gel. Following this incubation period, donor-matched human epidermal
25 keratinocytes in a biological medium are gently pipetted onto the gel and allowed to establish a confluent layer on its surface. The test plant extract is added and after a suitable incubation period (for example, between 6 and 24 hours), the gels are extracted and centrifuged and the proteolytic activity in the supernatant is assayed.

Immune cells can also be added to the above skin model in order to provide a source of elastase enzymes. Other examples of skin models are provided in the art, for example, see U.S. Patent No. 6,079,415 and references therein.

In vivo Testing of Protease Inhibition

5 Alternatively, the ability of the potential pre-extracts/extracts or extracts of the invention to inhibit protease activity may be assessed *in vivo* using various standard techniques. For example, the ability of the potential pre-extracts/extracts to inhibit protease activity can be determined in animal models or human volunteers. An example of a suitable animal model would be a skh-1 mouse or nude mouse or rat that is treated with an extract of the invention and then exposed to
10 UV radiation (see, Nishimori *et al.* (2001) *J. Invest. Dermatol.* 117:1458-1463). UV radiation is known to increase the level of activity of certain MMPs (see, for example, U.S. Patent No. 6,130,254). Skin biopsies are taken from the animal and the amount of EP activity in the biopsied sample is measured using standard techniques.

Human trials may also be used to evaluate the ability of an extract to inhibit EP activity in the
15 skin. For example, skin biopsies taken from adult volunteers exposed to UV radiation and treated prior to or after UV exposure with an extract can be assessed for EP activity and compared to an appropriate control (for example, skin biopsies from individuals treated with a control compound or untreated individuals).

Alternatively, as an age-related increase in the relative activities of MMP-1, MMP-2 and MMP-9
20 has been demonstrated (see, for example, U.S. Patent Application No. 20010053347), elderly individuals (for example, those over 80 years of age) could be used as volunteers for the trials without the requirement for UV exposure.

In order to assess the protease activity in skin biopsies, the samples are typically flash frozen, mechanically ground and/or homogenised. After centrifugation, the supernatants are isolated and
25 used to assess EP activity in assays such as those outlined above.

Determination of the Ability of the Extract to Inhibit EP-mediated ECM Degradation and/or Structural Changes in the Skin

In accordance with one embodiment of the present invention, extracts are capable of attenuating
5 EP-mediated ECM degradation in the skin. In the context of the present invention, EP-mediated ECM degradation refers to the breakdown of a structural component of the ECM, such as collagen, fibronectin, fibrillin and/or elastin, which can result in structural changes such as wrinkling of the skin and/or cell migration and angiogenesis.

In vitro Testing

- 10 The ability of the extracts of the invention to attenuate the breakdown of one or more matrix component can be assessed *in vitro* using a skin model such as those described above. After incubation with a plant extract, the gels can be extracted and assayed for the loss of one or more structural components of the ECM, such as elastin, collagen, fibronectin and/or fibrillin and/or for the presence fragments of these components can be assessed using standard techniques.
- 15 For example, elastin can be quantitated biochemically as desmosine or visualized histologically (Starcher B and Conrad M: Ciba Found Symp. 1995;192:338-46). Alternatively, confocal microscopy can be used in visualise the dermal microfibrillar network (Watson RE et al: J Invest Dermatol. 1999 May;112(5):782-7). Intact elastin and elastin fragments can also be measured by immunoblotting (Sakuraoka K et al: J Dermatol Sci 1996;12(3):232-237).
- 20 Biochemical and/or immunochemistry methods can be used to assess collagen changes. Ultrastructural methods can also be used to assess changes of collagen in treated skin (Fligiel SE et al: J Invest Dermatol. 2003 May;120(5):842-8). For example, type I collagen (Col I), the most abundant extracellular matrix protein deposited in cutaneous involvement, can be measured (Allanore Y et al: J Rheumatol. 2003 Jan;30(1):68-73).
- 25 Some of the more complex skin models allow for more sophisticated testing procedures such as those described by Roguet R (Skin Pharmacol Appl Skin Physiol. 2002;15 Suppl 1:1-3).

In addition, quantitative reverse transcriptase-polymerase chain reaction analysis can be used to determine the presence of dermal elastosis, diminished fibrillin and type VII collagen expression (Bosset S et al: Br J Dermatol. 2003 Apr;148(4):770-8).

- 5 In general, the ability of an extract to inhibit migration of cells can be assessed *in vitro* using standard cell migration assays. Typically, such assays are conducted in multi-well plates, the wells of the plate being separated by a suitable membrane into top and bottom sections. The membrane is coated with an appropriate compound, the selection of which is dependent on the type of cell being assessed and can be readily determined by one skilled in the art. Examples include collagen, gelatine or Matrigel for endothelial cells. An appropriate chemo-attractant, such as EGM-2, IL-8, aFGF, bFGF and the like, is added to the bottom chamber as a chemo-attractant. An aliquot of the test cells together with the extract are added to the upper chamber. Typically various dilutions of the extract are tested. After a suitable incubation time, the membrane is rinsed, fixed and stained. The cells on the upper side of the membrane are wiped off, and then randomly selected fields on the bottom side are counted.
- 15 Inhibition of cell migration can also be assessed using the cord formation assay. In this assay endothelial cells with or without plant extract are plated onto Matrigel and incubated under appropriate conditions. After a suitable period of time (for example, between 18 and 24 hours), migration of cells is assessed by visual inspection to determine whether the cells have formed into cords.
- 20 Various cell lines can be used in cell migration assays. Examples of suitable endothelial cell lines include, but are not limited to, human umbilical vein endothelial cells (HUVECs), bovine aortic endothelial cells (BAECs), human coronary artery endothelial cells (HCAECs), bovine adrenal gland capillary endothelial cells (BCE) and vascular smooth muscle cells. HUVECs can be isolated from umbilical cords using standard methods (see, for example, Jaffe *et al.* (1973) *J. Clin. Invest.* 52: 2745), or they can be obtained from the ATCC or various commercial sources, as can other suitable endothelial cell lines.
- 25

In vivo Testing

The ability of the extracts of the invention to attenuate EP-mediated ECM degradation in skin and structural changes associated therewith may also be assessed *in vivo* using various standard techniques. For example, using appropriate animal models and/or human volunteers. Endothelial cell migration can also be determined using the chick chorioallantoic membrane (CAM) assay,
5 Matrigel plug assay and/or corneal micropocket assay.

Degeneration of the ECM, in particular due to the breakdown of collagen and/or elastin, in skin biopsies can be assessed, for example, by histological examination of skin tissue after treatment with the extract. Methods described above for the determination of the breakdown of one or more structural components of the ECM can also be used on the biopsied samples.

- 10 Skin changes, such as wrinkling and/or sagging, reddening, formation of lesions, abnormal pigmentation and the like, can be assessed by visual examination. Histology can also be used to determine abnormal cell migration. Erythema in skin samples can be determined, for example, using commercially available chromameter.

- In addition, the plant extracts may also reduce inflammation in the skin. This can also be
15 assessed in human volunteers using standard techniques, including visual inspection.

- The CAM assay can be used to evaluate the ability of an extract to inhibit growth of blood vessels into various tissues (see Brooks *et al.*, in *Methods in Molecular Biology*, Vol. 129, pp. 257-269 (2000), ed. A.R. Howlett, Humana Press Inc., Totowa, NJ; Ausprunk *et al.*, (1975) *Am. J. Pathol.*, 79:597-618; Ossonski *et al.*, (1980) *Cancer Res.*, 40:2300-2309). The CAM assay
20 measures neovascularization of whole tissue, wherein chick embryo blood vessels grow into the CAM or into the tissue transplanted on the CAM, and is, therefore, a well-recognised assay model for *in vivo* angiogenesis. In addition, the assay provides an internal toxicity control in that the chick embryo is exposed to the potential pre-extract/extract over the course of the assay. The health of the embryo can, therefore, provide an indication of the cytotoxicity of the extract.
- 25 The Matrigel plug assay is also a standard method for evaluating the anti-angiogenic properties of compounds *in vivo* (see, for example, Passaniti, *et al.*, (1992) *Lab. Invest.* 67:519-528). In this assay, an extract is introduced into cold liquid Matrigel which, after subcutaneous injection into a suitable animal model, solidifies and permits penetration by host cells and the formation of new

blood vessels. After a suitable period of time, the animal is sacrificed and the Matrigel plug is recovered, usually together with the adjacent subcutaneous tissues. Assessment of angiogenesis in the Matrigel plug is achieved either by measuring haemoglobin or by scoring selected regions of histological sections for vascular density, for example by immunohistochemistry techniques identifying specific factors such as hemagglutinin (HA), CD31 (platelet endothelial cell adhesion molecule-1) or Factor VIII. Modifications of this assay have also been described (see, for example, Akhtar *et al.*, (2002) *Angiogenesis* 5:75-80; Kragh *et al.*, (2003) *Int J Oncol.* 22:305-11).

The corneal micropocket assay is usually conducted in mice, rats or rabbits and has been described in detail by others (see D'Amato, *et al.*, (1994) *Proc. Natl. Acad. Sci. USA*, 91:4082-4085; Koch *et al.*, (1991) *Agents Actions*, 34:350-7; Kenyon, *et al.*, (1996) *Invest. Ophthalmol. Vis. Sci.* 37:1625-1632). Briefly, pellets for implantation are prepared from sterile hydropolymer containing a suitable amount of the extract. The pellets are surgically implanted into corneal stromal micropockets created at an appropriate distance medial to the lateral corneal limbus of the animal. Angiogenesis can be quantitated at various times after pellet implantation through the use of stereomicroscopy. Typically, the length of neovessels generated from the limbal vessel ring toward the centre of the cornea and the width of the neovessels are measured.

Similarly to the CAM assay, the overall health of the animal used in either the Matrigel plug assay or the corneal micropocket assay provides some indication of the toxicity of the extract.

Additional Tests

In addition to the above tests, extracts of the invention may be submitted to other standard tests, such as cytotoxicity tests, stability tests, bioavailability tests and the like.

For example, the ability of an extract to penetrate the skin can be assessed by *in vitro* release tests (see, for example, the U.S. Center for Drug Evaluation and Research guidance document entitled "Guidance for Industry. Nonsterile Semisolid Dosage Forms. Scale-up and postapproval changes: *in vitro* release testing and *in vivo* bioequivalence documentation"). Typically, such testing is conducted using an open chamber diffusion cell, such as a Franz cell, fitted with an appropriate membrane. The test product is placed on the upper side of the membrane and kept

occluded to prevent solvent evaporation and compositional changes. A receptor fluid, such as aqueous buffer or hydro-alcoholic medium, is placed on the other side of the membrane in a receptor cell. Diffusion of the active component across the membrane is monitored by assay of sequentially collected samples of the receptor fluid. For the extracts of the invention, the assay
5 could comprise, for example, testing the ability of the collected sample to inhibit EP activity. The membrane can be a synthetic membrane, for example polysulphone, cellulose acetate or nitrate, or polytetrafluoroethylene, or it can be a skin sample, such as a sample taken from a cadaver.

As will be readily apparent to one skilled in the art, a selected extract will need to meet certain criteria in order to be suitable for *in vivo* use and to meet regulatory requirements. Conducting
10 such tests, therefore, allows the suitability of an extract for *in vivo* use to be assessed. Similarly, once an extract has been found to be suitable for animal administration, its efficacy may be determined by standard *in vivo* tests and human trials, such as those described above.

COMMERCIAL PROCESSES FOR PREPARING EXTRACTS OF THE INVENTION

The present invention contemplates the large-scale preparation of selected extracts of the
15 invention. Such extracts can be prepared on a commercial scale by repeating the extraction process that lead to the isolation of the extract of interest. One embodiment of this aspect of the invention is presented in Figure 3. In this embodiment, the small-scale extraction procedure is simply scaled-up and additional steps of quality control are included to ensure reproducible results for the resulting extracts. Similarly the process outlined in Figure 5 can be scaled up for
20 commercial purposes.

Also contemplated by the present invention are modifications to the small-scale procedure that may be required during scale-up for industrial level production of the extract. Such modifications include, for example, alterations to the solvent being used or to the extraction procedure employed in order to compensate for variations that occur during scale-up and render the overall
25 procedure more amenable to industrial scale production, or more cost effective. Modifications of this type are standard in the industry and would be readily apparent to those skilled in the art.

PURIFICATION/FRACTIONATION OF EXTRACTS AND ACTIVE INGREDIENTS

FROM EXTRACTS OF THE INVENTION

The present invention also provides for active ingredients isolated from the extracts of the invention, and for purified or concentrated extracts. In the context of the present invention an "active ingredient" is a compound or molecule that is capable of inhibiting one or more EP

5 secreted from mammalian skin cells. The active ingredient may be either proteinaceous or non-proteinaceous. "Purifying" an active ingredient or extract indicates that the active ingredient or purified extract can be obtained by purification, partial purification, and/or fractionation of an extract of the invention.

10 There are a number of techniques well known in the art for isolating active components from mixtures. For example, purification, partial purification, and/or fractionation can be performed using solid-liquid extraction, liquid-liquid extraction, solid-phase extraction (SPE), membrane filtration, ultrafiltration, dialysis, electrophoresis, solvent concentration, centrifugation, ultracentrifugation, liquid or gas phase chromatography (including size exclusion, affinity, etc.) with or without high pressure, lyophilisation, evaporation, precipitation with various "carriers"

15 (including PVPP, carbon, antibodies, etc.), or various combinations thereof. One skilled in the art, would appreciate how to use such options, in a sequential fashion, in order to enrich each successive fraction in the activity of interest by following its activity throughout the purification procedure. Typically, the activity is the inhibitory activity against an EP of interest and can be measured using assays such as those described above.

20 Solid-liquid extraction means include the use of various solvents in the art, and includes the use of supercritical solvents, soxhlet extractors, vortex shakers, ultrasounds and other means to enhance extraction, as well as recovery by filtration, centrifugation and related methods as described in the literature (see, for example, R. J. P. Cannell, *Natural Products Isolation*, Humana Press, 1998). Examples of solvents that may be used include, but are not limited to,

25 hydrocarbon solvents, chlorinated solvents, organic esters, organic ethers, alcohols, water, and mixtures thereof. In the case of supercritical fluid extraction, the invention also covers the use of modifiers such as those described in V. H. Bright (*Supercritical Fluid Technology*, ACS Symp. Ser. Vol. 488, ch. 22, 1999).

Liquid-liquid extraction means include the use of various mixtures of solvents known in the art, including solvents under supercritical conditions. Typical solvents include, but are not limited to, hydrocarbon solvents, chlorinated solvents, organic esters, organic ethers, alcohols, water, various aqueous solutions, and mixtures thereof. The liquid-liquid extraction can be effected
5 manually, or it can be semi-automated or completely automated, and the solvent can be removed or concentrated by standard techniques in the art (see, for example, S. Ahuja, *Handbook of Bioseparations*, Academic Press, 2000).

Solid-phase extraction (SPE) techniques include the use of cartridges, columns or other devices known in the art. The sorbents that may be used with such techniques include, but are not limited
10 to, silica gel (normal phase), reverse-phase silica gel (modified silica gel), ion-exchange resins, and fluorisil. The invention also includes the use of scavenger resins or other trapping reagents attached to solid supports derived from organic or inorganic macromolecular materials to remove selectively active ingredients or other constituents from the extracts.

Membrane, reverse osmosis and ultrafiltration means include the use of various types of
15 membranes known in the art, as well as the use of pressure, vacuum, centrifugal force, and/or other means that can be utilised in membrane and ultrafiltration processes (see, for example, S. Ahuja, *Handbook of Bioseparations*, Academic Press, 2000).

Dialysis means include membranes having a molecular weight cut-off varying from less than about 0.5 KDa to greater than about 50 KDa. The invention also covers the recovery of purified
20 and/or fractionated extracts from either the dialysate or the retentate by various means known in the art including, but not limited to, evaporation, reduced pressure evaporation, distillation, vacuum distillation, and lyophilization.

Chromatographic means include various means of carrying out chromatography known by those skilled in the art and described in the literature (see, for example, G. Sofer, L. Hagel, *Handbook
25 of Process Chromatography*, Academic Press, 1997). Examples include, but are not limited to, regular column chromatography, flash chromatography, high performance liquid chromatography (HPLC), medium pressure liquid chromatography (MPLC), supercritical fluid chromatography (SFC), countercurrent chromatography (CCC), moving bed chromatography,

simulated moving bed chromatography, expanded bed chromatography, and planar chromatography. With each chromatographic method, examples of sorbents that may be used include, but are not limited to, silica gel, alumina, fluorisil, cellulose and modified cellulose, various modified silica gels, ion-exchange resins, size exclusion gels and other sorbents known

5 in the art (see, for example, T. Hanai, *HPLC: A Practical Guide*, RSC Press, UK 1999). The present invention also includes the use of two or more solvent gradients to effect the fractionation, partial purification, and/or purification of said active extracts by chromatographic methods. Examples of solvents that may be utilised include, but are not limited to, hexanes, heptane, pentane, petroleum ethers, cyclohexane, heptane, diethyl ether, methanol, ethanol,
10 isopropanol, propanol, butanol, isobutanol, tert-butanol, water, dichloromethane, dichloroethane, ethyl acetate, tetrahydrofuran, dioxane, tert-butyl methyl ether, acetone, and 2-butanone. When water or an aqueous phase is used, it may contain varying amounts of inorganic or organic salts, and/or the pH may be adjusted to different values with an acid or a base such that fractionation and/or purification is enhanced.

15 In the case of planar chromatography, the present invention includes the use of various forms of this type of chromatography including, but not limited to, one- and two dimension thin-layer chromatography (1D- and 2D-TLC), high performance thin-layer chromatography (HPTLC), and centrifugal thin-layer chromatography (centrifugal TLC).

In the case of countercurrent chromatography (CCC), the present invention includes the use of
20 manual, semi-automated, and automated systems, and the use of various solvents and solvent combinations necessary to effect fractionation and/or purification of active ingredients or extracts (see, for example, W. D. Conway, R. J. Petroski, *Modern Countercurrent Chromatography*, ACS Symp. Ser. Vol. 593, 1995). Solvent removal and/or concentration can be
25 effected by various means known in the art including, but not limited to, reduced pressure evaporation, evaporation, reduced pressure distillation, distillation, and lyophilization.

The present invention includes the fractionation, partial purification, and purification of active ingredients or extracts by expanded bed chromatography, moving and simulated moving bed chromatography, and other related methods known in the art (see, for example, G. Sofer, L.

Hagel, *Handbook of Process Chromatography*, Academic Press, 1997 and S. Ahuja, *Handbook of Bioseparations*, Academic Press, 2000).

5 Selective precipitation means includes the use of various solvents and solvent combinations, the use of temperature changes, the addition of precipitant and/or modifiers, and/or modification of the pH by addition of base or acid to effect a selective precipitation of active ingredients or other constituents.

10 The invention also includes the fractionation, partial purification, and/or purification of active ingredients and extracts by steam distillation, hydrodistillation, or other related methods of distillation known in the art (see, for example, L. M. Harwood, C. J. Moody, *Experimental Organic Chemistry*, Blackwell Scientific Publications, UK, 1989).

15 The process of purifying the active ingredients or extracts also includes the concentration of purified or partially purified active ingredients or extracts by solvent removal of the original extract and/or fractionated extract, and/or purified extract. The techniques of solvent removal are known to those skilled in the art and include, but are not limited to, rotary evaporation, distillation (normal and reduced pressure), centrifugal vacuum evaporation (speed-vac), and lyophilization.

Purified, partially purified and/or concentrated active ingredients and extracts can be tested for their ability to inhibit one or more EP secreted by mammalian skin cells according to the one or more of the procedures described above.

20 **FORMULATIONS AND PHARMACEUTICAL COMPOSITIONS**

The present invention further provides for formulations and pharmaceutical compositions comprising one or more extract of the invention, one or more active ingredient, or a combination thereof. The formulations and pharmaceutical compositions may further comprise other therapeutic or cosmetic agents.

25 The formulations and pharmaceutical compositions are prepared by standard techniques such that they have acceptable toxicity and stability. In addition, if the formulation is to be

administered by a route other than topical (*e.g.* oral, intraperitoneal, intravenous, subcutaneous, intramuscular etc. routes), then the extract and/or active ingredient must demonstrate acceptable hepatotoxicity and must be sufficiently resistant to degradation to allow the site of action to be reached. Finally, the formulation or pharmaceutical composition must be formulated in a manner
5 to enable administration to the animal in need of treatment. Testing for the above parameters and formulation of appropriate compositions and formulations can be readily achieved by one skilled in the art.

Criteria which must be considered in the preparation of a formulation or pharmaceutical composition include, but are not limited to, the physicochemical and biochemical characteristics
10 (bioavailability, toxicity, stability, etc.) of the extracts and/or active ingredients which make up the formulation/composition. In particular, the formulation/composition is prepared so as to preserve, as much as possible, the maximum inhibitory activity of the active components upon administration, without being harmful to the animal.

Pharmaceutical compositions may be formulated by mixing the extracts and/or active ingredients
15 together with a physiologically acceptable carrier, excipient, binder, diluent, etc. Alternatively, the extracts and/or active ingredients can be formulated independently and the respective formulations can then be extemporaneously admixed using a diluent or the like and administered, or can be administered independently of each other, either concurrently or at staggered times to the same subject. One embodiment of the invention relates to pharmaceutical compositions
20 comprising a therapeutically effective amount of an extract or active ingredient, or a mixture of extracts and/or active ingredients, and a pharmaceutically acceptable carrier, diluent, vehicle, or excipient.

In another embodiment, the invention relates to the preparation of herbal and nutraceutical formulations comprising extracts and/or active ingredients or solid parts of the plant(s) from with
25 the extracts were obtained. For nutraceutical formulations comprising solid parts of plant(s), the plant(s) must be an edible plant. The extracts and/or active ingredients or plant parts can be used in these herbal remedies and nutraceutical compositions as solutions, purified solutions, or dry powders after treatments such as those described below.

The formulations and pharmaceutical compositions according to the invention may be in solid, semisolid or liquid form and may be adapted for oral (capsules tablets, phials, etc.), parenteral, rectal, inhalation, or topical administration, and may be in unit dosage form. Also, the formulation/composition may be adapted for slow release *in vivo* as known in the art. The

5 formulations and pharmaceutical compositions of the invention may be used in conventional form including, but not limited to, solutions, syrups, troches, lozenges, aqueous or oily suspensions, dispersible powders or granules, emulsions, hard or soft capsules, elixirs, injectables, tablets, capsules, suppositories, hydrophobic and hydrophilic creams and lotions. The term parenteral as used herein includes subcutaneous injections, intravenous, intramuscular, 10 intrasternal injection or infusion techniques. One or more extract and/or active ingredient may be present in association with one or more non-toxic pharmaceutically acceptable carriers and/or diluents and/or adjuvants and, if desired, other active ingredients.

Formulations and compositions intended for oral use may be prepared according to methods known in the art and may contain one or more agents such as sweetening agents, flavouring 15 agents, colouring agents and preserving agents in order to provide pharmaceutically elegant and palatable preparations. Tablets contain the extracts and/or active ingredients in admixture with non-toxic pharmaceutically acceptable excipients which are suitable for the manufacture of tablets. These excipients may be, for example, inert diluents, such as calcium carbonate, sodium carbonate, lactose, calcium phosphate or sodium phosphate: granulating and disintegrating 20 agents for example, corn starch, or alginic acid: binding agents, for example starch, gelatine or acacia, and lubricating agents, for example magnesium stearate, stearic acid or talc. The tablets may be uncoated or they may be coated by known techniques to delay disintegration and absorption in the gastrointestinal tract and thereby provide a sustained action over a longer period. For example, a time delay material such as glyceryl monostearate or glyceryl distearate 25 may be employed.

Formulations and compositions for oral use may also be presented as hard gelatine capsules wherein the active ingredient is mixed with an inert solid diluent, for example, calcium carbonate, calcium phosphate or kaolin, or as soft gelatine capsules wherein the active ingredient is mixed with water or an oil medium, for example peanut oil, liquid paraffin or olive oil.

Aqueous suspensions contain extracts and/or active ingredients in admixture with excipients suitable for the manufacture of aqueous suspensions. Such excipients are suspending agents, for example, sodium carboxymethylcellulose, methyl cellulose, hydropropylmethylcellulose, sodium alginate, polyvinylpyrrolidone, gum tragacanth and gum acacia: dispersing or wetting agents may be a naturally-occurring phosphatide, for example, lecithin, or condensation products of an alkylene oxide with fatty acids, for example polyoxyethylene stearate, or condensation products of ethylene oxide with long chain aliphatic alcohols, for example hepta-decaethyleneoxycetanol, or condensation products of ethylene oxide with partial esters derived from fatty acids and a hexitol such as polyoxyethylene sorbitol monooleate, or condensation products of ethylene oxide with partial esters derived from fatty acids and hexitol anhydrides, for example polyethylene sorbitan monooleate. The aqueous suspensions may also contain one or more preservatives, for example ethyl, or *n*-propyl *p*-hydroxy-benzoate, one or more colouring agents, one or more flavouring agents or one or more sweetening agents, such as sucrose or saccharin.

Oily suspensions may be formulated by suspending the extracts and/or active ingredients in a vegetable oil, for example, arachis oil, olive oil, sesame oil or coconut oil, or in a mineral oil such as liquid paraffin. The oily suspensions may contain a thickening agent, for example beeswax, hard paraffin or cetyl alcohol. Sweetening agents such as those set forth above, and flavouring agents may be added to provide palatable oral preparations. These compositions may be preserved by the addition of an anti-oxidant such as ascorbic acid.

20. Dispersible powders and granules suitable for preparation of an aqueous suspension by the addition of water provide the extracts and/or active ingredients in admixture with a dispersing or wetting agent, suspending agent and one or more preservatives. Suitable dispersing or wetting agents and suspending agents are exemplified by those described above. Additional excipients, for example, sweetening, flavouring and colouring agents, may also be present.

25 Formulations and pharmaceutical compositions of the invention may also be in the form of oil-in-water emulsions. The oil phase may be a vegetable oil, for example, olive oil or arachis oil, or a mineral oil, for example liquid paraffin or mixtures of these. Suitable emulsifying agents may be naturally-occurring gums, for example, gum acacia or gum tragacanth, naturally-occurring phosphatides, for example soy bean, lecithin, and esters or partial esters derived from fatty acids

and hexitol, anhydrides, for example sorbitan monoleate, and condensation products of the said partial esters with ethylene oxide, for example polyoxyethylene sorbitan monoleate. The emulsions may also contain sweetening and flavouring agents.

5 Syrups and elixirs may be formulated with sweetening agents, for example, glycerol, propylene glycol, sorbitol or sucrose. Such formulations may also contain a demulcent, a preservative and flavouring and colouring agents. The pharmaceutical compositions may be in the form of a sterile injectable aqueous or oleaginous suspension. This suspension may be formulation according to methods known in the art using suitable dispersing or wetting agents and suspending agents such as those mentioned above. The sterile injectable preparation may also be
10 sterile injectable solution or suspension in a non-toxic parentally acceptable diluent or solvent, for example as a solution in 1,3-butanediol. Among the acceptable vehicles and solvents that may be employed are water, Ringer's solution and isotonic sodium chloride solution. In addition, sterile, fixed oils are conventionally employed as a solvent or suspending medium. For this purpose any bland fixed oil may be employed including synthetic mono- or diglycerides. In
15 addition, fatty acids such as oleic acid find use in the preparation of injectables.

In one embodiment, the extracts of the invention are provided as a cosmetically suitable formulation, such as a lotion, gel, cream, liquid cream, ointment, oil base, or as a sprayable liquid form. Such formulations can include a cosmetically acceptable vehicle to act as a diluent, dispersant or carrier for the active components in the extract, so as to facilitate their distribution
20 when the formulation is applied to the skin.

Cosmetically acceptable vehicles other than water can include liquid or solid emollients, solvents, humectants, thickeners and powders. An example of a non-aqueous carrier is a polydimethyl siloxane and/or a polydimethyl phenyl siloxane having a viscosity ranging from about 10 to 10,000,000 centistokes at 25°C, such as those available from the General Electric
25 Company (Vicasil, SE and SF) and from the Dow Corning Company (under the 200 and 550 Series). Mixtures of low and high viscosity silicones can also be used. Amounts of silicone which can be utilised range from 5 to 95%, for example from 25 to 90%, by weight of the final formulation.

The cosmetically acceptable vehicle will usually form from about 5 to about 99.9%, for example from about 25 to about 80% by weight, of the final formulation, and can, in the absence of other cosmetic adjuncts, form the balance of the final formulation.

Skin benefit ingredients and cosmetic adjuncts can optionally be included in the formulations.

- 5 For example, an oil or oily material can be present, together with an emulsifier to provide either a water-in-oil emulsion or an oil-water emulsion, depending largely on the average hydrophilic-lipophilic balance (HLB) of the emulsifier employed.

- 10 Various types of skin benefit ingredients can be also be optionally included in the cosmetic formulations of the present invention. Examples of skin benefit ingredients include, but are not limited to, sunscreens, essentially fatty acids, antioxidants, retinoids and tanning agents.

- 15 Sunscreens include those materials commonly employed to block ultraviolet light. Illustrative compounds are the derivatives of PABA, cinnamate and salicylate. For example, octyl methoxycinnamate and 2-hydroxy-4-methoxy benzophenone (also known as oxybenzone), which are commercially available under the trademarks, Parsol MCX and Benzophenone-3, respectively, can be used. The exact amount of sunscreen employed in the emulsions can vary depending upon the degree of protection desired from the sun's UV radiation and can be readily determined by one skilled in the art.

- 20 Essential fatty acids (EFAs) are those fatty acids which are essential for the plasma membrane formation of all cells. In keratinocytes, EFA deficiency makes cells hyperproliferative. EFAs also enhance lipid biosynthesis of epidermis and provide lipids for the barrier formation of the epidermis. Examples of essential fatty acids include linoleic acid, γ -linolenic acid, homo- γ -linolenic acid, columbinic acid, eicosa-(n-6,9,13)-trienoic acid, arachidonic acid, γ -linolenic acid, timnodonic acid, hexaenoic acid and mixtures thereof.

- 25 Azoles, e.g., clotrimazole, bifonazole, clotrimazole, ketoconazole, miconazole, econazole, itraconazole, fluconazole, terconazole, butoconazole, sulconazole, lionazole and mixtures thereof, may also optionally be included in the formulations.

Emollients are often incorporated into cosmetic formulations. Levels of such emollients may range from about 0.5% to about 50%, for example, from between about 5% and 30% by weight of the total formulation. Emollients may be classified under such general chemical categories as esters, fatty acids and alcohols, polyols and hydrocarbons. Mixtures of various emollients may also be used.

Esters may be mono- or di-esters. Acceptable examples of esters include dibutyl adipate, diethyl sebacate, diisopropyl dimerate, dioctyl succinate, 2-ethyl-hexyl myristate, isopropyl stearate, isostearyl palmitate, triisopropyl trilinoleate, triauryl citrate, lauryl palmirate, myristyl lactate, oleyl eurate, stearyl oleate, coco-caprylate/caprate (a blend of coco-caprylate and coco-caprate), propylene glycol myristyl ether acetate, diisopropyl adipate and cetyl octanoate.

Suitable fatty alcohols and acids include those compounds having from 10 to 20 carbon atoms, such as cetyl, myristyl, palmitic and stearyl alcohols and acids.

Among the polyols which may serve as emollients are linear and branched chain alkyl polyhydroxyl compounds. For example, propylene glycol, sorbitol, glycerin, polypropylene glycol and polyethylene glycol. Butylene and propylene glycol are also useful as penetration enhancers.

Exemplary hydrocarbons which may serve as emollients are those having hydrocarbon chains from 12 to 30 carbon atoms. Specific examples include mineral oil, petroleum jelly, squalene and isoparaffins.

The cosmetic formulations of the present invention can further optionally comprise one or more thickener. A thickener will usually be present in amounts from 0.1 to 20% by weight, for example from about 0.5% to 10% by weight, of the formulation. Exemplary thickeners are cross-linked polyacrylate materials available under the trademark Carbopol (B. F. Goodrich Company), xanthan gum, carrageenan, gelatin, karaya, pectin and locust bean gum. Under certain circumstances the thickening function may be accomplished by a material also serving as a silicone or emollient. For instance, silicone gums in excess of 10 centistokes and esters such as glycerol stearate have dual functionality.

Powders can be incorporated into the cosmetic formulation. These powders include chalk, talc, Fullers earth, kaolin, starch, smectite clays, chemically modified magnesium aluminum silicate, organically modified montmorillonite clay, hydrated aluminum silicate, fumed silica, aluminum starch octenyl succinate and mixtures thereof.

- 5 Other adjunct minor components can also be incorporated into the cosmetic formulations, for example, colouring agents, opacifiers, perfumes and preservatives (e.g. imidazolidinyl urea, dimethyl imidazolidinone and diazolidinyl urea). Amounts of these materials can range from 0.001% up to 20% by weight of the formulation.

- 10 The cosmetic formulations can be packaged in a suitable container to suit the viscosity and intended use. For example, a lotion or fluid cream can be packaged in a bottle or a roll-ball applicator, a capsule, a propellant-driven aerosol device or a container fitted with a pump suitable for finger operation. When the composition is a cream, it can simply be stored in a non-deformable bottle or squeeze container, such as a tube or a lidded jar.

USE

- 15 The present invention further provides for the *in vivo* use of the extracts of the invention and/or active ingredients derived from the extracts, and formulations and pharmaceutical compositions comprising extracts and/or active ingredients. Thus, the extracts, active ingredients, formulations or pharmaceutical compositions can be administered to an animal in order to attenuate undesirable structural changes in the skin, such as skin wrinkling and/or sagging, redness and
20 formation of lesions, and to ameliorate conditions associated therewith.

To gain a better understanding of the invention described herein, the following examples are set forth. It should be understood that these examples are for illustrative purposes only. Therefore, they should not limit the scope of this invention in any way.

EXAMPLES

EXAMPLE I: *Preparation of Stressed and Non-stressed Plant Extracts (Method A)*

Pre-Harvest Treatment: Aerial parts of a living plant were sprayed with an aqueous solution of gamma linolenic acid (6,9,12-Octadecatrienoic acid, Sigma L-2378) (stress G) or arachidonic acid (5,8,11,14-Eicosatetraenoic acid, Sigma A-3925) (stress A) (400 μ M in water with 0.125% (v/v) Triton X-100) to completely cover the leaves. Twenty to twenty-four hours after the stress, plants were harvested.

Harvest Solid S1 and Optional Storage Treatment: Twenty to twenty-four hours after the stress, more than 4 grams of leaves, stems, fruit, flowers, seeds or other plant parts were harvested and frozen immediately in dry ice, then transferred as soon as possible to a -20°C freezer until use. Plant materials may be stored at -20 C for a long period of time, more than a year, without losing inhibitory activity. Temperature was monitored to ensure a constant condition.

Stressed and non-stressed plant specimens were collected as wet samples and stored at -20°C for various periods of time, and were submitted to a process which generates 3 subfractions: aqueous, ethanolic and organic fractions. The complete extraction process was performed in a continuous cycle using the following steps. An initial 5g of plant specimen was homogenized in liquid nitrogen with a blender. The resulting powder was weighed.

Extraction Process I - Aqueous Extraction: To each 4.5 grams of plant powder, 12 ml of a cold solution of 100 mM Tris, pH 7.0 was added. The mixture was thoroughly vortexed for 2 minutes. The mixture was kept on ice for 30 minutes and vortexed after each 10 minute period of time. The sample was centrifuged in a Corex™ 30 ml tube for 5 minutes at 4500 rpm. The resulting supernatant was decanted in a 15 ml tube after filtration with a Miracloth™ filter. This extract represents Potential Pre-Extract A. The pellet, referred to as Solid S2, was kept for ethanolic extraction.

The aqueous extract (Potential Pre-Extract A) was further purified in order to determine its EP inhibition capability. The Potential Pre-Extract A was purified by size-exclusion

chromatography, wherein the aqueous extract was chromatographed on a calibrated Sephadex G-25 column (1 × 10 cm) using a 20 mM Tris-HCl, 150 mM NaCl, pH 7.5 buffer as eluant.

Fractions corresponding to compounds that appeared to have a molecular weight (MW) less than 1500 daltons (D) were pooled to constitute the purified aqueous extract that was tested for

5 inhibitory activity as described in Example II.

Prior to this analysis, the extract was treated with 10% gelatin-Sepharose (Pharmacia Biotech, Uppsala, Sw.) in order to remove unspecific enzyme ligands. To 1 mL of extract, 100µL of gelatin-Sepharose resin was added in a microassay tube, the solution in the tube was mixed, kept on ice for 30 minutes, and then centrifuged 5 minutes at 5,000rpm. The supernatant was

10 removed and used directly for assays.

Extraction Process II - Alcoholic Extraction: To the pellet, Solid S2, collected from the previous aqueous extraction, 12 ml of cold ethanol:methanol (85:15) was added and the mixture was thoroughly vortexed for 2 minutes. The mixture was kept on ice for 30 minutes and vortexed every 10 minutes. The sample was centrifuged in a Corex™ 30 ml tube for 5 minutes at 4,500

15 rpm. The resulting supernatant was decanted in a 15 ml tube after filtration with a Miracloth™ filter. The pellet, referred to as Solid S3, was kept for the subsequent organic extraction. This extract represents Potential Pre-Extract B.

The ethanolic extract, Potential Pre-Extract B, was purified by liquid/liquid extraction prior to analysis by enzymatic assay. For this purpose, 1 ml of ethanolic extract was evaporated under vacuum, dissolved in 150 µl of dimethylsulfoxide (DMSO), and completed to a final volume of 1.5 ml with Tris buffer (final concentration: Tris-HCl 20 mM; pH 7.5). Four ml of hexane was added to the Tris phase in a glass tube and the tube was thoroughly vortexed, then allowed to form a biphasic liquid. The organic phase was removed and the extract was submitted to a second round of liquid/liquid extraction. The aqueous phase was removed and treated with 10%

25 gelatin-Sepharose (Pharmacia Biotech, Uppsala, Sw) to remove unspecific enzyme ligands prior to conducting subsequent assays. To 1 ml of extract, 100µL of gelatin-Sepharose resin was added in a microassay tube, the tube was mixed, kept on ice for 30 minutes, and then centrifuged

5 minutes at 5,000rpm. Supernatant was removed and used directly for assays as described in Example II.

Extraction Process III - Organic Extraction: To the pellet, Solid S3, collected from previous ethanolic extraction, 12 ml of cold dichloromethane was added and the mixture was thoroughly vortexed for 2 minutes. The mixture was kept on ice for 30 minutes and vortexed after each 10 minutes period. The sample was centrifuged in a Corex™ 30 ml tube for 5 minutes at 4,500 rpm. The resulting supernatant was decanted in a 15 ml glass tube after filtration with a Miracloth™ filter. The final pellet was discarded. The organic solvent was evaporated under vacuum and the phase was dissolved with dimethylsulfoxide (DMSO). This extract represents Potential Pre-Extract C, which was further purified by solid phase extraction prior to analysis by enzymatic assay.

In order to assay the Potential Pre-Extract C, the organic extract was diluted 1:10 in a solution of DMSO:Methanol:Tris (20mM, pH 7.5) (10 :50 :40) (Solution A), i.e., 220 µl of extract was added to 2.0 ml of solution A. After 10 seconds of vigorous vortex, the mix was sonicated for 10 seconds. Dissolved extracts were subsequently applied to a solid phase extraction plate (Discovery SPE-96, Sigma Chemical Co, St-Louis, Mo). After initial conditioning of the columns with 1 ml of methanol, columns were equilibrated with solution A, and extract samples were deposited on the columns. Elution was completed with solution A (final volume of 2 ml) and this fraction was used directly in assays as described in Example II.

20 **EXAMPLE II: In vitro Enzyme Inhibition Assays**

The inhibitory activity of sample compositions towards human MMP-1, human MMP-2, human MMP-3, human MMP-9, human cathepsin-B, human cathepsin-D, human cathepsin-G, human cathepsin-L, human cathepsin-K, human leukocyte elastase (HLE), bacteria clostripain and bacteria subtilisin were determined using either fluorogenic substrates or the FASC assay.

25 *Measurement of human MMP-1, -2, -3 and -9 activity with fluorogenic peptidic substrates*
MMP-1, -2, -9 were purified from natural sources (human immortalized cell lines: 8505C

(Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH) for MMP-1, HT-1080 (ATCC, Manassas, VA) for MMP-2 and THP-1 (ATCC, Manassas, VA) for MMP-9) as described in literature and based on protocols found in I.M. Clark: «*Matrix metalloproteinases protocols*», Humana Press (2001). Recombinant human MMP-3 was overexpressed in *E. coli* and purified according to Windsor LJ, Steele DL (2001), *Methods Mol Biol* 151:191-205.

Proteolytic activity of these proteases was evaluated with the assay based on the cleavage of auto-quenched peptide substrate : (MCA-Pro-Leu-Gly-Leu-Dpa-Ala-Arg-NH₂ ·TFA [Dpa = N-3-(2,4-dinitrophenyl)-L-2,3-diaminopropionyl]) for MMP-1, -2, and -9; and, MCA-Arg-Pro-Lys-Pro-Val-Glu-Nva-Trp-Arg-Lys(DNP)-NH₂ (DNP = 2,4-dinitrophenyl; Nva = L-norvaline) for MMP-3 (Calbiochem, San Diego, CA). In the intact peptide, Dpa or DNP quenches the MCA fluorescence. Cleavage of the peptide causes release of the fluorescent MCA group which was then quantitated on a fluorometer (Gemini XS, Molecular Devices, Sunnyvale, CA). The assay was performed in TNCZ assay buffer (20mM Tris-HCl; NaCl 150mM; CaCl₂ 5mM; ZnCl₂ 0.5mM; pH 7.5) with human purified proteases (I.M. Clark: *Matrix metalloproteinases protocols*, Humana Press (2001)). The substrate, primarily dissolved in DMSO was then redissolved in TNCZ buffer for the assay. In a typical assay, 10 µl of purified enzyme (1-50 ng) and

5µl of dissolved substrate (final concentration of 10 µM) was mixed in a final volume of 75 µl (completed with TNCZ). All assays were performed in 96 well plate and the reaction was started by the addition of substrate. Assays were measured (excitation 325 nm, emission 392 nm) for 20, 40 and 60 minutes.

Measurement of human Cathepsin L and K activity with fluorogenic peptidic substrate.

Human recombinant cathepsins L and K were overexpressed in *P. pastoris* according to the protocol described by Krupa and Mort (*Anal Biochem* (2000), 283(1):99-103). The assay was similar to that described above except for the auto-quenched peptidic substrate: Z-Arg-Phe-AMC, 2HCl (Bachem California, Torrance, CA) and reaction buffer. Assays for Cathepsin L were performed in 20mM acetate pH 5.5, 1mM EDTA buffer and assays for Cathepsin K in 20mM acetate pH 4.2, 1mM EDTA. Assays were monitored with fluorometer settled at excitation 380 nm/emission 460 nm wavelengths (Krupa JC, Mort JS. (2000), *Anal Biochem*

283(1):99-103).

Measurement of human MMP-9, Cathepsin B, Cathepsin G, and human leukocyte elastase (HLE) activity using the FASC assay

Human Cathepsin B and G and human leukocyte elastase were obtained from Calbiochem (San Diego, CA). Human MMP-9 was purified as previously described. The assay was based on the method described in Canadian Patent No. 2,189,486 (1996) and by St-Pierre *et al.*, (*Cytometry* (1996) 25:374-380. For the assay, 5 µl of the purified enzyme (1-100 ng), 5 µl of concentrated buffer solution (20mM Tris-HCl; NaCl 150mM; CaCl₂ 5mM; ZnCl₂ 0.5mM; pH 7.5), and 5 µl of gelatin-FITC beads were typically used in a final volume of 100 µl. The assay was performed by incubation of the reaction mixture for 90 minutes at 37°C. The reaction was stopped by the transfer of the mix in 0.5 ml of 20 mM Tris, 150 mM NaCl; pH 9.5 buffer. This tube was analyzed in a flow cytometer (Epics MCL, Beckman Coulter, Mississauga, Ontario) as described in Canadian Patent No. 2,189,486 (1996).

Measurement of human Cathepsin D, Cathepsin B, Cathepsin G and HLE activity with a fluorogenic proteic substrate

Cathepsin D was purified from human MCF-7 cells according to the method described by Stewart *et al.*, (*Int J Cancer* (1994) 57(5):715-8. Cathepsin B, Cathepsin G and HLE were obtained as previously described. The activities of Cathepsin D, Cathepsin B, Cathepsin G and HLE were measured by an assay based on the increase of fluorescence of a proteic substrate (Haemoglobin in the case of Cathepsin D and B and beta-casein in the case of Cathepsin G and HLE) heavily labelled with Alexa-488 dye (Molecular Probes, Eugene, Or). The substrate, when highly labelled with the dye, will almost quench the dye fluorescence. Cleavage of the substrate will result in an increase of the fluorescence which can be measured with a spectrofluorometer, and which was proportional to protease activity. Typically, 10 µl of purified human Cathepsin D, Cathepsin B, Cathepsin G or HLE (10-50 ng) and 10µL of Hemoglobin-Alexa488 or beta-casein-Alexa488 (100 ng) were assayed in final volume of 75 µl adjusted with 20 mM citrate pH 3.3 buffer in the case of Cathepsins D and B or TNCZ buffer in the case of Cathepsin G and HLE. The reaction was performed as already described except that the fluorescence was read at

excitation 488 nm/emission 525 nm wavelengths.

Subtilisin assay

Subtilisin (isolated from *B. subtilis*) was purchased from Fluka. Assays were performed with a fluorogenic peptide (Z-Gly-Gly-Leu-AMC, Bachem California, Torrance, CA) as already
5 described for MMPs with the following modification: the assay was buffered with 20mM Tris, 150mM NaCl; pH 7.5 and the results were read at excitation 380 nm/emission 460 nm wavelengths.

Clostripain assay

Clostripain from *Clostridium histolyticum* (Worthington Lakewood, NJ) was prepared and
10 activated as described by manufacturer's protocol. The activity was determined by using Z-Arg-Arg-AMC, 2HCl (Calbiochem, San Diego, CA) as a fluorogenic peptidic substrate and the incubation buffer was 75mM phosphate, pH 7.6. The reaction was performed as already described except that the fluorescence was read at excitation 380 nm/emission 460 nm wavelengths.

15 *Extract inhibition assay*

Before a typical assay, aqueous extracts prepared as described in Example I were preincubated with 1:10 of gelatin-Sepharose 4B™ for 30 minutes to remove fluorescence quenching. For the ethanolic extract, an initial hexane extraction was performed and samples were treated with 1:10 of gelatin-Sepharose 4B™ to remove quenching.

20 In a typical fluorescent assay, 10 µl of purified enzyme at concentrations previously mentioned for the enzymatic assay, 5 µl of dissolved fluorogenic peptide or 10 µl of dissolved fluorescent proteic substrate (final concentration of 10 µM) and 40µL of the aqueous, ethanolic or organic extract to be tested and prepared as described in Example I were mixed in a final volume of 75 µl (completed with TNCZ for fluorogenic peptide substrate assay or 20mM citrate pH 3.3 buffer for
25 fluorescent protein substrate assay). All assays were performed in 96 well plate and the reaction was started by the addition of substrate. Assays were measured (excitation 325 nm, emission 392

nm for peptide and excitation 488 nm/emission 525 nm wavelengths for protein) for 20, 40 and 60 minutes. Activity and inhibition values were determined from the increase in fluorescence

For the FASC assay, 35 µl of the treated extract prepared as described in Example I, 5 µl of the purified enzyme prepared as described previously, 5 µl of concentrated buffer solution (TNCZ),
5 and 5 µl of gelatin-FITC beads were typically used. The initial step of the assay was the incubation of the reaction without beads for a 30 minutes period on ice to allow the binding of inhibitors to enzyme. Fluorescent beads were added and the reaction mix was incubated for 90 minutes at 37°C. The reaction was stopped by transfer of the mix in 0.5 ml of 20 mM Tris, 150 mM NaCl; pH 9.5 buffer. This tube was analyzed in the flow cytometer (Epics MCL, Beckman
10 Coulter, Mississauga, Ontario) as described in Canadian Patent Application No. 2,189,486 (1996).

The results from the above assays for MMP-1, MMP-2, MMP-3, MMP-9, cathepsin B, cathepsin D, cathepsin G, cathepsin L and HLE are presented in Tables 1 – 9, respectively.

EXAMPLE III: *Exemplary purification of inhibitory activity found in an extract*

15 Extracts were separated by HPLC on an Agilent 1100 system (San Fernando, CA). Briefly, 100µL of a crude extract prepared as described in Example I was applied on a C18 reverse-phase column (Purospher RP-18 5µm, 4.0 x 125mm (HP), Agilent, San Fernando, CA). Elution of compounds was achieved with a linear gradient of 10-85% acetonitrile. Fractions were collected, evaporated, resuspended in aqueous buffer and then reanalysed for their inhibition activity on
20 specific enzymes as already described. Fractions of interest (demonstrating a biological activity) where then reisolated at a larger scale for further analysis and characterisation.

EXAMPLE IV: *Preparation of Plant Extracts (Method B)*

Method B is summarized in general terms in Figure 5. The method can be divided into two main parts corresponding to preliminary analytical scale extraction and a second larger scale extraction
25 process.

1. Analytical scale extraction – selection of plants / extracts

The processed plant materials (leaves, roots, or seeds) are obtained by dedicated greenhouse cultivation (with or without physical / chemical stress), from commercial suppliers, or by gathering from non-cultivated natural sources. For each plant used in either analytical scale or large scale extraction, a properly identified and labelled sample is kept in storage in the laboratory.

The extraction protocols for both the preliminary analytical scale and large scale extractions are shown generally in Figure 6.

The collected dried plant material (2 - 10 g) is first submitted to solid-liquid extractions to generate crude extract A (mg scale). Two different solvents are tested (ethanol/methanol or ethanol/water mixtures). The extracts are then defatted with hexane to yield hydroalcoholic or alcoholic extract B and hexane extract C. A partitioning of extract B with ethyl acetate is then performed after dilution with water to yield aqueous extract E and organic extract F.

The extracts are sampled and evaluated for their ability to inhibit one or more target protease by the extract and their ability to attenuate one or more structural change in the skin in a skin model using the methods described below.

Analysis of the results allows for the selection of plant materials for the large-scale extraction. The selection includes a decision regarding part of the plant and quantity of dried material needed to obtain sufficient mass of extract for pure active compound isolation. The selection also involves a choice of solvent system (aqueous *versus* alcoholic) and active extract (B, E or F) to be used in further work.

The extracts are also analyzed by Thin Layer Chromatography (TLC) with different reagents specific to classical chemical groups of natural products (terpenes, alkaloids, phenolic acids, polyphenols) to evaluate the increase in concentration achieved by partitioning at each step, and also to remove any materials likely to produce false positive results (fatty acids, chlorophylls) and to provide an indication of which fractionation steps to use in further extractions.

2. Large scale extraction - isolation

For each new specimen, a repeat analytical scale extraction is performed to confirm the biological activity before beginning the large-scale extraction process.

- 5 The first step is to release the secondary metabolites from the dried and powdered material by means of an all purpose solvent mixture which is selected based on the results obtained in the analytical scale preparation. This can be done by successive maceration / percolation operations using the same solvent which should dissolve most natural compounds at the same time. The bulk of the inert and insoluble material such as cellulose is then removed by filtration.
- 10 Conditions of drying and grinding are controlled (temperature of drying less than 45°C, particles size).

The second step is to remove a portion of the unwanted material in a series of liquid-liquid low resolution extractions using solvents of different polarity with the aim of a multi-gram mixture containing all the natural products of interest and to remove the most of the undesired material.

- 15 The extraction protocol is illustrated in Figure 6 and is essentially the same as the procedure for the analytical preparation. The dried and pulverized material (2-3 Kg for large scale) is extracted repeatedly (maceration / percolation) with ethanol / methanol [85:15] v/v (a) or ethanol / water [85:15] v/v (b) mixtures (3 x 5 - 10 L) at room temperature for 2 x 24-48 h, based on the analytical scale results (yield of extraction).
- 20 In the case of an alcoholic extraction (a), the combined alcoholic extracts (A) are concentrated under reduced pressure, diluted with water (10 -15%) and extracted with hexane (or heptane) to yield hexane extract (C) and hydroalcoholic fraction (B). This is then concentrated and diluted with ethanol (20%) before being extracted with ethyl acetate to yield aqueous (E) and ethyl acetate extracts (F).
- 25 In the case of an hydroalcoholic extraction (b), the combined aqueous extracts (A) are extracted with hexane to yield hexane extract (C) and hydroalcoholic fraction (B). The latter is then

concentrated until residual water and diluted with ethanol (20%) before extracted-with ethyl acetate to yield aqueous (E) and ethyl acetate extracts (F).

5 All the extracts (A-F) are sampled to verify the process recovery and the aliquots are submitted to a biological evaluation (selective enzymatic inhibition). The results are compared with those obtained on the analytical scale section and the selected positive extract is then concentrated to dryness under reduced pressure.

All the extracts are analyzed by TLC to compare with analytic scale extracts.

EXAMPLE V: *Protease Inhibition by Plant Extracts in a Human Skin Model*

10 A cellular model of the skin was used to determine the potential inhibitory effect of plant extracts prepared as described in Example IV in the skin. Human dermal fibroblasts (Cascade Biologics, 5×10^4 /well), type 1 collagen (3 mg/ml, Sigma), and cell culture medium were pipetted into 12 or 24-well untreated Falcon plates and incubated for 1 hour at 37°C, allowing for gel formation. Cell culture medium was then added to the wells and the gels were incubated overnight at 37°C in a 5% CO₂ controlled atmosphere. The gels were incubated for 5 days, with media changes at
15 days 2 and 4, allowing for fibroblast proliferation, with collagen and protease synthesis and secretion into the gel. On day 5, the media were removed and donor-matched human epidermal keratinocytes (Cascade Biologics, 10^5 cells/well) in biological medium were gently pipetted onto the gels. The wells were further incubated for 3 days with change of media on day 7, allowing for the establishment of a confluent layer of keratinocytes on the surface of the gel. On day 8,
20 media were removed and culture medium containing the test plant extracts was added to the wells, followed by 6 or 24 hour incubations at 37°C in a 5% CO₂ controlled atmosphere. The gels were then removed from the wells and extracted with PBS, with 3 freeze-thaw cycles, followed by centrifugation. The proteolytic activity in the supernatants was assayed by means of a fluorometric assay as described above.

25 The results are provided in Table 10.

EXAMPLE VI: *Effect of Plant Extracts on Cell Migration*

Plant extracts were prepared as described in Example IV and underwent further testing to ascertain that they contain stable, non-cytotoxic molecules that are appropriate for product development. Stability is ascertained by recovery of protease inhibition over time under various conditions, including physiological conditions. Cytotoxicity is ascertained by incubation of the extracts with various cell types, including those indicated below.

Methods for determining inhibition of cell migration

In order to test the effect of various plant extracts that are also validated protease inhibitors on cellular migration, a cellular migration assay coupled with a cord formation assay using endothelial cells was conducted. The experimental details are provided below and the results of the tests are set forth in Table 11. Concentrations of plant extracts are expressed as a function of the IC₅₀ concentration determined for protease inhibition, which is termed 1X. The extracts are, therefore, capable of decreasing the activity of at least one extracellular protease by at least 50% when measured according to one of the assays described herein. The 1X concentration can vary depending on the plant and the solvent used in the preparation of the extract. The average concentration of a 1X aqueous extract is about 1.6 mg/ml, whereas the average concentration of a 1X alcoholic extract is about 4 mg/ml. For each extract tested in the assays described below, 4 different concentrations were used (0.31X, 0.62X, 1.25X and 2.5X) in duplicate.

20 *Cell Migration Assays*

Migration was assessed using a multi-well system (Falcon 1185, 24-well format), separated by a PET membrane (8µm pore size) into top and bottom sections. Depending on the cells that are used in the assay, the membrane was coated with 10µg/ml rat tail collagen (for HUVECs) or with 80µg/cm² of Matrigel growth factor (BD Biosciences) (for cancer cell lines) and allowed to dry. All solutions used in top sections were prepared in DMEM-0.1% BSA, whereas all solutions used in the bottom sections were DMEM, or other media, containing 10% fetal calf serum.

For HUVECs (Clonetics), EGM-2 (700µl) was added to the bottom chamber as a chemo-attractant. HUVEC (100 µl of 10⁶ cells/ml) and buffer containing the plant extract at the

appropriate dilution were added to the upper chamber (duplicate wells of each plant extract at each dilution). After 5h incubation at 37°C in a 5% CO₂ atmosphere, the membrane was rinsed with PBS, fixed and stained. The cells on the upper side of the membrane were wiped off, three randomly selected fields were counted on the bottom side.

- 5 The percent inhibition of migration is calculated as follows:

$$[(A - B)/A] \times 100,$$

where A is the average number of cells per field in the control well and B is the average number of cells per field in the treated wells.

Cord Formation Assay

- 10 Matrigel (60μl of 10mg/ml) was added to a 96-well plate flat bottom plate (Costar 3096) and incubated for 30 minutes at 37°C in a 5% CO₂ atmosphere. A mixture of HUVECs and plant extract, or positive controls (Fumagillin and GM6001) were added to each well. HUVECs were prepared as suspensions of 2.5×10^5 cells per ml in EGM-2, then 500μl of HUVECs preparation was mixed with 500μl of 2X of the desired dilution of plant extract or control drug and 200μl
15 were added to each well. Four dilutions of each extract were tested in duplicate. After 18-24 hours at 37°C in 5% CO₂, the cells had migrated and organized into cords (see Figure 4, which shows the results using an extract from *Rheum rhabarbarum*).

The number of cell junctions were counted in 3 randomly selected fields and the inhibition of cord formation is calculated as follows:

20 $[(A - B)/A] \times 100,$

where A is the average number of cell junctions per field in the control well and B is the average number of cell junctions per field in the treated wells.

EXAMPLE VII: *Plant Extracts that Inhibit Human Leukocyte Elastase (HLE)*

- Plant extracts were prepared as described in Example IV and were tested for their ability to
25 inhibit HLE as described in Example II.

Results are presented in Table 12.

The disclosure of all patents, publications, including published patent applications, and database entries referenced in this specification are specifically incorporated by reference in their entirety to the same extent as if each such individual patent, publication, and database entry were specifically and individually indicated to be incorporated by reference.

- 5 The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Achillea millefolium	A	O	22.2
Acorus calamus	A	O	100.0
Actinidia arguta	A	O	56.4
Agastache foeniculum	A	S	30.4
Alchemilla mollis	A	4	36.4
Allium cepa	A	O	61.4
Allium grande	A	R	46.5
Allium porrum	A	R	25.0
Allium porrum	A	O	98.9
Allium sativum	A	O	42.5
Allium sativum	A	R	98.7
Allium schoenoprasum	A	R	22.3
Allium Tuberosum	A	R	29.9
Allium Tuberosum	A	O	100.0
Althaea officinalis	A	S	21.6
Angelica archangelica	A	S	45.9
Anthemis nobilis	A	R	34.5
Aralia nudicaulis	A	O	100.0
Armoracia rusticana	A	O	31.2
Armoracia rusticana	A	S	39.7
Aronia melanocarpa	A	R	39.8
Aster sp	A	O	67.6
Beckmannia eruciformis	A	O	24.1
Beta vulgaris	A	R	41.2
Beta vulgaris spp. Maritima	A	O	44.1
Brassica napus	A	O	26.3
Brassica oleracea	A	S	28.6
Brassica oleracea	A	R	33.8
Brassica Oleracea	A	O	100.0
Brassica rapa	A	R	61.4
Calamintha nepeta	A	R	40.2
Camellia sinensis	A	O	39.3
Capsicum annuum	A	R	34.3
Capsicum annuum	A	O	88.3
Capsicum frutescens	A	R	39.4
Chenopodium bonus - henricus	A	O	100.0
Chenopodium bonus-henricus	A	R	37.3
Chenopodium quinoa	A	O	66.3
Chrysanthemum coronarium	A	R	37.4

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Cichorium intybus	A	R	22.0
Cichorium intybus	A	S	66.9
Citrullus lanatus	A	O	41.9
Cornus canadensis	A	S	73.0
Crataegus sp	A	O	100.0
Cucumis Anguria	A	S	34.2
Cucurbita moschata	A	O	27.3
Cucurbita pepo	A	O	84.9
Cymbopogon citratus	A	O	100.0
Cymbopogon citratus	A	R	22.1
Cyperus esculentus	A	R	25.8
Cyperus esculentus	A	O	28.1
Dactylis glomerata	A	O	25.5
Daucus carota	A	O	43.4
Daucus carota	A	R	100.0
Dipsacus sativus	A	O	35.3
Dirca palustris	A	S	47.9
Eruca vesicaria	A	R	33.7
Eschscholzia californica	A	O	61.1
Eschscholzia californica	A	R	74.1
Filipendula rubra	A	O	51.7
Foeniculum vulgare	A	O	86.2
Fragaria x ananassa	A	O	23.7
Fragaria Xananassa	A	S	40.6
Fragaria x ananassa	A	R	28.3
Galinsoga ciliata	A	R	29.7
Gallium odoratum	A	6	48.8
Gaultheria hispidula	A	R	23.9
Glycine max	A	R	24.7
Glycine max	A	S	29.6
Glycine max	A	O	100.0
Guizotia abyssinica	A	S	39.4
Hamamelis virginiana	A	R	49.1
Helianthus Tuberosus	A	O	95.9
Heliotropium arborescens	A	R	25.0
Hordeum hexastichon	A	O	100.0
Hordeum vulgare	A	O	46.2
Hordeum vulgare subsp. Vulgare	A	O	43.8
Inula helenium	A	O	25.8

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Lathyrus sativus	A	O	27.1
Leonurus cardiaca	A	O	34.4
Levisticum officinale	A	R	31.7
Lolium multiflorum	A	O	39.0
Lotus corniculatus	A	O	100.0
Malva sylvestris	A	R	22.8
Matricaria recutita	A	O	25.1
Mateucia pennsylvanica	A	R	48.1
Medicago sativa	A	R	25.1
Melissa officinalis	A	O	100.0
Mentha piperita	A	O	60.1
Mentha suaveolens	A	O	35.1
Nepeta cataria	A	O	100.0
Nicotiana rustica	A	R	20.7
Organum vulgare	A	R	60.5
Organum vulgare	A	O	73.2
Perilla frutescens	A	R	74.4
Perilla frutescens	A	O	92.4
Petroselinum crispum	A	R	77.4
Phacelia tanacetifolia	A	R	52.8
Phaseolus coccineus	A	R	20.9
Phaseolus coccineus	A	S	34.2
Phaseolus Vulgaris	A	S	29.2
Phaseolus vulgaris	A	R	56.1
Phaseolus Vulgaris	A	R	60.0
Phaseolus Vulgaris	A	O	100.0
Phlox paniculata	A	O	100.0
Pimpinella anisum	A	S	100.0
Pimpinella anisum	A	R	72.2
Plantago coronopus	A	R	23.7
Plectranthus sp.	A	O	25.0
Poa compressa	A	O	31.5
Potentilla anserina	A	R	71.2
Pysalis ixocarpa	A	R	32.1
Raphanus raphanistrum	A	O	31.5
Raphanus sativus	A	O	100.0
Raphanus sativus	A	O	30.2
Rheum officinale	A	O	79.1
Rheum rhabarbarum	A	R	22.9

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Rheum rhubarbarum	A	R	32.8
Ribes nigrum	A	O	100.0
Ribes nigrum	A	R	100.0
Ribes salivum	A	R	48.6
Ribes sylvestre	A	S	26.5
Ribes uva-crispa	A	R	100.0
Rubus canadensis	A	R	46.1
Rubus canadensis	A	R	53.1
Rubus idaeus	A	R	100.0
Salvia officianalis	A	O	100.0
Salvia sclarea	A	S	43.8
Satureja montana	A	R	100.0
Solanum dulcamara	A	S	43.8
Solanum melancerasum	A	R	37.2
Solanum tuberosum	A	R	100.0
Sorghum dochna	A	O	100.0
Stachys byzantina	A	S	28.9
Stellaria media	A	S	33.1
Tanacetum parthenium	A	O	28.9
Tanacetum vulgare	A	R	76.0
Taraxacum officinale	A	O	65.7
Thymus praecox subsp arcticus	A	O	64.2
Thymus praecox subsp arcticus	A	R	88.2
Thymus vulgaris	A	R	42.7
Thymus x citriodorus	A	O	34.7
Trichosanthes kirilowii	A	R	31.8
Trifolium hybridum	A	R	96.0
Trifolium incarnatum	A	R	100.0
Trifolium pannonicum	A	R	27.7
Trifolium repens	A	R	79.5
Vaccinium augustifolium	A	R	52.5
Vaccinium macrocarpon	A	O	64.5
Vicia sativa	A	O	60.8
Vicia sativa	A	R	28.6
Vicia villosa	A	R	64.7
Vicia villosa	A	O	57.3
Vigna sesquipedalis	A	O	33.0
Vigna sesquipedalis	A	R	24.4
Vigna unguiculata	A	R	20.6

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Vitis spp	A	R	72.6
Vitis spp	A	O	100.0
Zea Mays	A	R	99.2
Zea Mays	A	O	100.0
Abelmoschus esculentus	G	R	37.6
Aconitum napellus	G	O	100.0
Allium ampeloprasum	G	R	33.4
Allium ascalonicum	G	R	31.5
Allium cepa	G	O	34.4
Allium cepa	G	R	36.4
Allium sativum	G	R	53.2
Allium tuberosum	G	R	68.3
Althaea officinalis	G	O	47.7
Athaea officinalis	G	S	30.7
Athaea officinalis	G	S	44.3
Athaea officinalis	G	R	83.6
Anethum graveolens	G	S	44.3
Apium graveolens	G	R	27.7
Armoracia rusticana	G	O	51.8
Armoracia rusticana	G	S	47.1
Aronia melanocarpa	G	S	66.5
Artemisia dracunculus	G	S	79.0
Artemisia dracunculus	G	R	50.3
Asparagus officinalis	G	O	96.4
Bellis perennis	G	R	44.1
Beta vulgaris spp. Maritima	G	R	43.7
Beta vulgaris spp. Maritima	G	O	34.9
Betula glandulosa	G	S	40.8
Borago officinalis	G	O	30.3
Borago officinalis	G	R	29.7
Brassica cepticepa	G	R	21.9
Brassica oleracea	G	O	33.6
Brassica oleracea	G	O	100.0
Brassica rapa	G	O	42.5
Brassica rapa	G	R	40.2
Calamintha nepeta	G	O	28.7
Calendula officinalis L.	G	O	100.0
Camellia sinensis	G	O	46.4
Campanula rapunculus	G	R	27.2

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Capsella bursa-pastoris	G	R	24.1
Capsicum annum	G	O	36.0
Chaerophyllum bulbosum	G	R	38.9
Chenopodium quinoa	G	O	100.0
Cichorium intybus	G	S	44.6
Cirsium arvense	G	R	30.3
Citullus lanatus	G	R	21.2
Cucurbita pepo	G	O	59.5
Cucurbita Pepo	G	O	40.2
Cuminum cyminum	G	R	25.5
Cymbopogon citratus	G	R	33.7
Datura stramonium	G	O	73.5
Daucus carota	G	O	86.0
Daucus carota	G	O	27.9
Dryopteris filix-mas	G	O	21.9
Erysimum perofskianum	G	O	24.4
Fagopyrum esculentum	G	O	100.0
Foeniculum vulgare	G	O	28.0
Foeniculum vulgare	G	R	57.3
Gaultheria hispidula	G	O	44.2
Gaultheria procumbens	G	R	94.8
Glechoma hederacea	G	O	25.5
Glycine max	G	S	100.0
Glycyrrhiza glabra	G	O	24.9
Guizotia abyssinica	G	R	30.3
Helenium hoopesii	G	O	28.6
Helianthus annuus	G	O	33.6
Helianthus tuberosus	G	O	54.4
Hordeum vulgare	G	O	28.8
Hordeum vulgare subsp. Vulgare	G	R	28.1
Hypericum henryi	G	R	80.0
Iberis amara	G	O	44.6
Lactuca sativa	G	R	25.3
Lathyrus sylvestris	G	O	90.2
Lavandula angustifolia	G	R	22.5
Lepidium Sativum	G	S	29.5
Levisticum officinale	G	O	100.0
Lolium multiflorum	G	O	24.9
Lolium multiflorum	G	R	27.1

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Lotus corniculatus	G	O	52.2
Lycopersicon esculentum	G	R	24.4
Lycopersicon pimpinellifolium	G	R	30.3
Malus hupehensis	G	R	65.8
Malva verticillata	G	R	43.1
Matricaria recutita	G	S	100.0
Matteucia pennsylvanica	G	R	57.5
Melissa officinalis	G	O	28.5
Mentha piperita	G	O	36.0
Mentha spicata	G	S	20.3
Mentha spicata	G	S	26.0
Mentha suaveolens	G	O	60.5
Nepeta cataria	G	O	24.1
Nicotiana rustica	G	R	28.1
Nicotiana tabacum	G	R	40.6
Oenothera biennis	G	R	28.4
Oenothera biennis	G	O	100.0
Origanum vulgare	G	S	100.0
Origanum vulgare	G	O	20.1
Origanum vulgare	G	O	85.4
Oryza Sativa	G	R	53.3
Panax quinquefolius	G	S	100.0
Panicum miliaceum	G	S	100.0
Passiflora caerulea	G	O	20.9
Pastinaca sativa	G	R	68.4
Pastinaca sativa	G	O	100.0
Pennisetum alopecuroides	G	R	100.0
Petroselinum crispum	G	R	73.0
Phalaris canariensis	G	O	100.0
Phaseolus coccineus	G	R	29.9
Phaseolus coccineus	G	R	67.6
Phaseolus coccineus	G	O	32.4
Phaseolus vulgaris	G	R	33.4
Phaseolus vulgaris	G	R	60.2
Phaseolus vulgaris	G	R	22.3
Phaseolus vulgaris	G	O	87.7
Phlox paniculata	G	O	89.3
Physalis pruinosa	G	O	37.0
Plantago coronopus	G	R	48.1

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
<i>Plantago major</i>	G	O	47.0
<i>Plectranthus sp.</i>	G	O	97.2
<i>Potentilla anserina</i>	G	R	22.0
<i>Prunella vulgaris</i>	G	O	21.2
<i>Raphanus Raphanistrum</i>	G	O	95.9
<i>Raphanus sativus</i>	G	O	67.7
<i>Reseda odorata</i>	G	O	40.6
<i>Rheum officinale</i>	G	O	82.1
<i>Rheum rhabarbarum</i>	G	R	48.1
<i>Ribes Nigrum</i>	G	R	100.0
<i>Ribes Sylvestre</i>	G	O	42.9
<i>Ricinus communis</i>	G	O	73.5
<i>Rubus Phoenicalasius</i>	G	R	31.4
<i>Ruta graveolens</i>	G	R	100.0
<i>Salvia officinalis</i>	G	R	100.0
<i>Santolina</i>	G	R	28.1
<i>Satureja hortensis</i>	G	R	100.0
<i>Satureja repandra</i>	G	O	57.1
<i>Scrophularia nodosa</i>	G	R	41.6
<i>Scutellaria lateriflora</i>	G	S	72.1
<i>Sium sisarum</i>	G	O	99.7
<i>Solanum dulcamara</i>	G	R	65.4
<i>Solanum melancerasum</i>	G	R	32.4
<i>Solanum melorgena</i>	G	O	100.0
<i>Solanum tuberosum</i>	G	S	46.4
<i>Sorghum cafferum</i>	G	R	100.0
<i>Sorghum dochna</i>	G	R	51.4
<i>Sorghum dochna</i>	G	R	39.6
<i>Sorghum sudanense</i>	G	O	97.4
<i>Stachys byzantina</i>	G	O	41.4
<i>Stellaria media</i>	G	O	33.8
<i>Symphytum officinale</i>	G	O	52.0
<i>Tanacetum parthenium</i>	G	O	79.1
<i>Tanacetum vulgare</i>	G	O	100.0
<i>Taraxacum officinale</i>	G	S	25.9
<i>Teucrium chamaedrys</i>	G	O	100.0
<i>Teucrium chamaedrys</i>	G	R	48.0
<i>Thymus praecox subsp arcticus</i>	G	R	73.1
<i>Thymus x citriodorus</i>	G	O	52.2

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Trichosanthes kirilowii	G	O	35.9
Trifolium hybridum	G	R	76.0
Trifolium incarnatum	G	R	73.4
Trifolium pannonicum	G	R	24.8
Trifolium repens	G	R	48.5
Triticosecale spp.	G	R	48.5
Triticum spelta	G	R	22.9
Tropaeolum majus	G	S	23.4
Urtica dioica	G	O	96.4
Vaccinium corymbosum	G	S	60.7
Vaccinium corymbosum	G	R	61.4
Vaccinium angustifolium	G	R	54.7
Vicia sativa	G	R	68.8
Vicia sativa	G	O	31.5
Vicia villosa	G	O	100.0
Vicia villosa	G	R	35.5
Vigna sesquipedalis	G	R	23.0
Vitis spp	G	R	36.9
Withania somnifera	G	O	44.0
Xanthium strumarium	G	R	37.6
Zea mays	G	O	100.0
Aconitum napellus	T	R	100.0
Agaricus bisporus	T	R	58.9
Agaricus bisporus	T	O	100.0
Allium ampeloprasum	T	R	43.3
Allium ascalonicum	T	R	34.5
Allium cepa	T	R	53.5
Allium cepa	T	O	45.8
Allium grande	T	R	43.2
Allium schoenoprasum	T	R	47.1
Allium tuberosum	T	R	74.6
Allium tuberosum	T	O	33.6
Aloe vera	T	R	34.1
Althaea officinalis	T	S	47.8
Amelanchier alnifolia	T	R	59.1
Ananas comosus	T	O	100.0
Anthemis nobilis	T	O	22.7
Anthriscus cerefolium	T	O	56.8
Apium graveolens	T	R	29.8

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
<i>Aralia nudicaulis</i>	T	O	100.0
<i>Amoracia rusticana</i>	T	O	58.9
<i>Artemisia dracunculoides</i>	T	O	100.0
<i>Asparagus officinalis</i>	T	R	25.2
<i>Atriplex hortensis</i>	T	R	44.7
<i>Bellis perennis</i>	T	R	58.1
<i>Beta vulgaris</i>	T	R	37.3
<i>Betula glandulosa</i>	T	O	23.5
<i>Boletus edulis</i>	T	S	64.2
<i>Brassica juncea</i>	T	R	35.6
<i>Brassica napus</i>	T	O	100.0
<i>Brassica oleracea</i>	T	R	33.2
<i>Brassica oleracea</i>	T	O	49.7
<i>Camellia sinensis</i>	T	O	24.7
<i>Camellia sinensis</i>	T	R	45.7
<i>Canna edulis</i>	T	R	26.2
<i>Carum carvi</i>	T	O	100.0
<i>Chaerophyllum bulbosum</i>	T	R	40.9
<i>Chrysanthemum coronarium</i> (Chp suey)	T	R	48.1
<i>Chrysanthemum coronarium</i>	T	R	29.9
<i>Chrysanthemum coronarium</i>	T	R	100.0
<i>Cichorium endivia</i>	T	R	20.5
<i>Cichorium endivia</i>	T	R	21.9
<i>Cichorium intybus</i>	T	S	50.6
<i>Cichorium intybus</i>	T	R	31.7
<i>Cichorium intybus</i>	T	R	52.9
<i>Citrullus lanatus</i>	T	O	100.0
<i>Citrus paradisi</i>	T	O	40.6
<i>Cocos nucifera</i>	T	O	27.2
<i>Cornus canadensis</i>	T	S	44.9
<i>Crithmum maritimum</i>	T	R	32.3
<i>Cucumis anguria</i>	T	O	22.6
<i>Cucurbita moschata</i>	T	O	33.5
<i>Cucurbita moschata</i> (Early Butternut)	T	R	32.3
<i>Cucurbita pepo</i>	T	O	89.0
<i>Cuminum cyminum</i>	T	R	54.3
<i>Curcuma zedoaria</i>	T	S	100.0
<i>Cymbopogon citratus</i>	T	O	42.6
<i>Datura metel</i>	T	O	24.8

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Datura metel	T	R	25.5
Dioscorea batatas	T	R	100.0
Dipsacus sativus	T	O	85.0
Dryopteris filix-mas	T	O	46.4
Erigeron canadensis	T	O	100.0
Eruca vesicaria	T	R	30.9
Erysimum perofskianum	T	O	23.0
Eschscholzia californica	T	O	37.8
Eschscholzia californica	T	R	20.8
Fagopyrum esculentum	T	O	100.0
Fagopyrum tartaricum	T	R	78.5
Foeniculum vulgare	T	O	63.4
Foeniculum vulgare	T	O	27.2
Forsythia x intermedia	T	S	32.0
Fragaria x ananassa	T	S	33.0
Galinsoga ciliata	T	R	25.8
Gaultheria procumbens	T	O	46.8
Hedeoma pulegioides	T	O	73.6
Helianthus tuberosus	T	O	39.3
Hordeum vulgare	T	O	32.4
Humulus lupulus	T	O	21.1
Hypericum henryi	T	R	29.3
Hypericum perforatum	T	R	42.7
Iberis amara	T	O	29.5
Ipomea aquatica	T	R	22.9
Lathyrus Sativus	T	R	69.4
Laurus nobilis	T	O	70.2
Lavandula latifolia	T	O	100.0
Lens culinaris subsp. Culinaris	T	O	70.2
Lepidium sativum	T	O	100.0
Levisticum officinale	T	O	100.0
Lolium multiflorum	T	O	35.1
Lunaria annua	T	O	100.0
Lycopersicon pimpinellifolium	T	R	24.4
Malus hupehensis	T	R	73.1
Malus sp.	T	R	80.9
Malva sylvestris	T	R	34.7
Malva sylvestris	T	O	100.0
Manihot esculenta	T	R	33.0

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Melissa officinalis	T	O	100.0
Melissa officinalis	T	O	100.0
Mentha suaveolens	T	S	39.7
Nigella sativa	T	R	58.9
Nigella sativa	T	R	100.0
Ocimum Basilicum	T	R	100.0
Origanum majorana	T	O	41.5
Origanum vulgare	T	O	29.8
Origanum vulgare	T	R	33.1
Panax quinquefolius	T	R	75.2
Passiflora spp.	T	S	32.0
Pastinaca sativa	T	R	20.8
Petroselinum crispum	T	R	55.4
Petroselinum crispum	T	R	76.1
Petroselinum crispum	T	O	24.1
Peucedanum oreoselinum	T	O	21.0
Phacelia tanacetifolia	T	R	48.6
Phalaris canariensis	T	O	56.4
Phaseolus coccineus	T	R	22.7
Phaseolus mungo	T	R	47.4
Phaseolus vulgaris	T	R	40.0
Phaseolus vulgaris	T	O	29.4
Phoenix dactylifera	T	R	46.3
Physalis ixocarpa goldie ou pourpre	T	R	28.9
Phytolacca americana	T	O	100.0
Plectranthus sp.	T	O	73.8
Pleurotus spp.	T	O	100.0
Poa compressa	T	O	22.3
Poa pratensis	T	O	73.1
Populus Tremula	T	O	100.0
Prunella vulgaris	T	O	38.0
Psoralea corylifolia	T	S	96.4
Pteridium aquilinum	T	R	100.0
Raphanus raphanistrum	T	O	100.0
Raphanus sativus	T	R	33.7
Raphanus sativus	T	R	28.0
Raphanus sativus	T	O	100.0
Reseda luteola	T	S	69.6
Reseda odorata	T	O	51.8

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
Rheum officinale	T	O	46.7
Rheum officinale	T	S	100.0
Ribes nigrum	T	R	30.0
Ribes Sativum	T	R	61.7
Ribes Sylvestre	T	R	75.4
Ricinus communis	T	S	100.0
Rosmarinus officinalis	T	R	29.0
Rubus canadensis	T	R	86.1
Sabal serulata	T	R	100.0
Salvia officinalis	T	O	100.0
Sambucus canadensis	T	O	24.8
Satureja montana	T	R	100.0
Satureja repandra	T	S	27.2
Satureja repandra	T	O	36.4
Satureja repandra	T	R	42.0
Scrophularia nodosa	T	R	68.8
Secale cereale	T	O	100.0
Setaria italica	T	R	23.2
Silybum marianum	T	O	73.5
Solanum melongena	T	R	20.1
Solanum tuberosum	T	S	24.4
Solidago virgaurea	T	R	71.4
Sorghum dochna	T	O	22.5
Stachys byzantina	T	O	39.2
Stellaria media	T	O	43.3
Symphytum officinale	T	O	58.7
Tanacetum parthenium	T	O	100.0
Tanacetum vulgare	T	O	32.5
Taraxacum officinale	T	S	27.8
Teucrium chamaedrys	T	R	62.9
Teucrium chamaedrys	T	O	100.0
Thapsi arvense	T	O	21.2
Thymus praecox subsp arcticus	T	R	60.9
Tragopogon portifolium	T	R	24.6
Trifolium incarnatum	T	R	33.7
Trifolium pannonicum	T	R	72.4
Trifolium repens	T	R	72.4
Triticosecale spp.	T	R	33.7
Tropaeolum majus	T	R	100.0

Table I
MMP-1 Inhibition

Latin Name	Stress	Extract	Inhibition (%)
<i>Tropaeolum majus</i>	T	O	31.5
<i>Vaccinium angustifolium</i>	T	O	100.0
<i>Vaccinium angustifolium</i>	T	S	42.1
<i>Vaccinium macrocarpon</i>	T	S	30.9
<i>Vicia villosa</i>	T	R	35.5
<i>Vigna sesquipedalis</i>	T	R	24.0
<i>Vigna unguiculata</i>	T	R	31.6
<i>Vinca minor</i>	T	O	28.7
<i>Withania somnifera</i>	T	O	26.9
<i>Xanthium strumarium</i>	T	O	30.9
<i>Zea mays</i>	T	R	20.1
<i>Zea mays</i>	T	O	32.2

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Achillea millefolium	A	S	21.9
Achillea millefolium	A	O	63.0
Achillea millefolium	A	R	100.0
Aconitum napellus	A	R	71.0
Alcea rosea	A	R	67.9
Alchemilla mollis	A	O	64.4
Allium ascalonicum	A	R	20.9
Allium cepa	A	R	84.3
Allium grande	A	R	36.7
Allium porrum	A	O	100.0
Allium porum	A	S	51.9
Allium porum	A	R	66.7
Allium sativum	A	R	100.0
Allium schoenoprasum	A	R	73.5
Allium Tuberosum	A	S	24.3
Allium Tuberosum	A	O	83.6
Allium Tuberosum	A	R	89.3
Aloe vera	A	R	69.7
Althaea officinalis	A	S	27.6
Althaea officinalis	A	R	64.7
Amaranthus gangeticus	A	S	29.4
Anethum graveolens	A	O	100.0
Apium graveolens	A	S	25.1
Apium graveolens	A	R	52.1
Aralia cordata	A	S	66.4
Aralia cordata	A	R	92.2
Aralia nudicaulis	A	O	29.4
Arctium minus	A	S	28.4
Armoracia rusticana	A	S	20.2
Armoracia rusticana	A	O	55.0
Arrhenatherum elatius	A	S	40.2
Artemisia dracunculoides	A	S	39.7
Asparagus officinalis	A	S	29.3
Atriplex hortensis	A	R	33.6
Avena sativa	A	R	37.2
Beta vulgaris	A	S	45.4
Beta vulgaris	A	R	95.9
Beta vulgaris spp. Maritima	A	R	100.0

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Brassica chinensis	A	R	49.6
Brassica napus	A	O	28.5
Brassica Napus	A	S	52.4
Brassica Napus	A	R	82.4
Brassica nigra	A	O	29.2
Brassica oleracea	A	R	31.2
Brassica Oleracea	A	R	31.4
Brassica oleracea	A	R	64.0
Brassica oleracea	A	S	68.7
Brassica oleracea	A	R	75.3
Brassica oleracea	A	O	100.0
Brassica rapa	A	S	27.6
Brassica rapa	A	R	33.4
Brassica rapa	A	O	57.6
Brassica rapa	A	R	58.1
Brassica rapa	A	R	84.5
Calamintha nepeta	A	O	65.0
Camellia sinensis	A	S	21.9
Camellia sinensis	A	R	26.5
Camellia sinensis	A	O	79.0
Cana edulis	A	R	45.5
Canna edulis	A	S	20.2
Capsella bursa-pastoris	A	S	35.5
capsicum annuum	A	S	61.5
Capsicum annuum	A	O	89.8
Capsicum annuum	A	R	100.0
Capsicum frutescens	A	S	66.6
Capsicum frutescens	A	R	100.0
Carthamus tinctorius	A	R	21.3
Carthamus tinctorius	A	R	21.5
Chaerophyllum bulbosom	A	R	57.2
Chelidonium majus	A	S	34.4
Chenopodium bonus - henricus	A	R	43.5
Chenopodium bonus - henricus	A	O	100.0
Chenopodium bonus-henricus	A	R	76.4
Chenopodium quinoa	A	O	92.0
Chrysanthemum coronarium	A	R	48.6
Chrysanthemum coronarium	A	O	49.7

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Chrysanthemum coronarium	A	R	47.3
Chrysanthemum coronarium	A	R	26.7
Cicer arietinum	A	S	22.0
Cicer arietinum	A	O	23.6
Cichorium intybus	A	S	21.1
Cichorium intybus	A	R	100.0
Citrullus lanatus	A	S	65.5
Citrullus lanatus	A	R	96.3
Citrullus lanatus	A	O	100.0
Coix Lacryma-Jobi	A	O	32.2
Cornus canadensis	A	S	52.8
Cosmos sulphureus	A	R	72.5
Crataegus spp	A	O	100.0
Cryptotaenia canadensis	A	R	50.6
Cryptotaenia canadensis	A	O	51.3
Cucumis anguria	A	S	53.4
Cucumis Anguria	A	R	84.9
Cucumis melo	A	R	91.7
Cucurbita Maxima	A	S	34.9
Cucurbita Maxima	A	R	41.7
Cucurbita moschata	A	R	36.8
Cucurbita moschata	A	S	37.4
Cucurbita pepo	A	S	48.1
Cucurbita pepo	A	R	85.7
Curcuma zedoaria	A	S	21.0
Curcuma zedoaria	A	R	32.1
Curcubita maxima	A	S	27.0
Cymbopogon citratus	A	R	34.5
Cymbopogon citratus	A	O	100.0
Cymbopogon martinii	A	S	47.4
Dactylis glomerata	A	S	20.6
Dactylis glomerata	A	O	75.0
Daucus carota	A	S	44.5
Daucus carota	A	R	70.5
Dipsacus sativus	A	O	40.4
Dirca palustris	A	S	27.2
Dolichos Lablab	A	S	54.2
Dryopteris filix-mas	A	R	76.3
Echinacea purpurea	A	R	42.9

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Eleusine coracana	A	S	37.5
Eleusine coracana	A	O	100.0
Erigeron canadensis	A	O	45.7
Eruca vesicaria	A	R	80.2
Eschscholzia californica	A	S	42.4
Eschscholzia californica	A	O	75.0
Eschscholzia californica	A	R	88.8
Fagopyrum esculentum	A	O	100.0
Fagopyrum tartaricum	A	R	38.6
Fagopyrum tartaricum	A	S	40.3
Fagopyrum tartaricum	A	O	71.0
Filipendula rubra	A	R	36.3
Foeniculum vulgare	A	R	41.6
Foeniculum vulgare	A	S	84.4
Foeniculum vulgare	A	O	100.0
Forsythia intermedia	A	R	35.8
Fragaria x ananassa	A	R	97.2
Galinoga ciliata	A	R	54.0
Galium odoratum	A	O	34.3
Galium odoratum	A	O	100.0
Gaultheria hispidula	A	S	35.8
Gaultheria hispidula	A	R	100.0
Glaux maritima	A	R	46.5
Glycine max	A	S	27.0
Glycine Max	A	R	43.1
Glycine max	A	O	100.0
Guizotia abyssinica	A	S	29.8
Guizotia abyssinica	A	R	32.5
Hamamelis virginiana	A	R	75.7
Helianthus annuus	A	R	69.0
Helianthus Tuberosus	A	R	22.2
Helianthus tuberosus	A	R	69.7
Helianthus Tuberosus	A	O	100.0
Hordeum hexastichon	A	R	22.3
Hordeum hexastichon	A	R	34.9
Hordeum hexastichon	A	O	86.9
Hordeum vulgare	A	O	74.8
Hordeum vulgare subsp. Vulgare	A	S	34.5

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Hordeum vulgare</i> subsp. <i>Vulgare</i>	A	O	74.2
<i>Hyssopus officinalis</i>	A	O	57.5
<i>Inula helenium</i>	A	S	26.8
<i>Ipomoea Batatas</i>	A	S	20.1
<i>Lathyrus sativus</i>	A	S	28.7
<i>Lathyrus sativus</i>	A	O	100.0
<i>Lathyrus sylvestris</i>	A	R	42.4
<i>Lavandula latifolia</i>	A	O	39.1
<i>Lepidium sativum</i>	A	O	20.1
<i>Lepidium sativum</i>	A	S	49.0
<i>Levisticum officinale</i>	A	S	23.0
<i>Levisticum officinale</i>	A	O	29.8
<i>Linum usitatissimum</i>	A	R	56.9
<i>Lolium multiflorum</i>	A	S	41.5
<i>Lolium multiflorum</i>	A	O	92.3
<i>Lotus corniculatus</i>	A	O	95.5
<i>Lotus tetragonolobus</i>	A	R	76.7
<i>Lycopersicon esculentum</i>	A	S	35.3
<i>Lycopersicon esculentum</i>	A	R	78.1
<i>Lycopersicon esculentum</i>	A	R	85.6
<i>Lycopersicon pimpinillofolium</i>	A	R	74.9
<i>Malva moschata</i>	A	S	21.5
<i>Malva moschata</i>	A	O	44.5
<i>Malva verticillata</i>	A	R	22.0
<i>Matricaria recutita</i>	A	S	40.9
<i>Matricaria recutita</i>	A	O	67.3
<i>Melaleuca alternifolia</i>	A	O	65.0
<i>Meilothus albus</i>	A	S	50.7
<i>Meilothus albus</i>	A	O	100.0
<i>Melissa officinalis</i>	A	O	42.4
<i>Mentha pulegium</i>	A	O	88.3
<i>Mentha spicata</i>	A	O	94.8
<i>Mentha suaveolens</i>	A	O	82.9
<i>Nepeta cataria</i>	A	O	100.0
<i>Nicotiana rustica</i>	A	S	24.0
<i>Nicotiana rustica</i>	A	R	100.0
<i>Nicotiana tabacum</i>	A	S	42.5
<i>Nicotiana tabacum</i>	A	R	61.1
<i>Nigella sativa</i>	A	R	81.7

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Ocimum tenuiflorum</i>	A	R	23.1
<i>Oenothera biennis</i>	A	R	28.6
<i>Origanum majorana</i>	A	O	52.9
<i>Origanum majorana</i>	A	R	100.0
<i>Origanum vulgare</i>	A	O	66.8
<i>Panax quinquefolius</i>	A	S	31.8
<i>Pastinaca sativa</i>	A	S	27.7
<i>Pastinaca sativa</i>	A	R	33.8
<i>Petasites japonicus</i>	A	S	26.2
<i>Petroselinum crispum</i>	A	R	69.1
<i>Phalaris canariensis</i>	A	S	28.4
<i>Phalaris canariensis</i>	A	R	29.7
<i>Phalaris canariensis</i>	A	O	94.3
<i>Phaseolus coccineus</i>	A	S	30.8
<i>Phaseolus coccineus</i>	A	R	79.5
<i>Phaseolus coccineus</i>	A	O	80.9
<i>Phaseolus mungo</i>	A	R	59.8
<i>Phaseolus vulgaris</i>	A	S	47.3
<i>Phaseolus Vulgaris</i>	A	R	74.4
<i>Phaseolus vulgaris</i>	A	R	83.2
<i>Phaseolus Vulgaris</i>	A	O	100.0
<i>Phlox paniculata</i>	A	O	23.7
<i>Phlox paniculata</i>	A	R	81.7
<i>Physalis alkekengi</i>	A	R	23.5
<i>Physalis ixocarpa</i>	A	O	85.8
<i>Physalis ixocarpa</i>	A	R	91.5
<i>Physalis Pruinosa</i>	A	R	25.7
<i>Physalis Pruinosa</i>	A	O	83.5
<i>Phytolacca decandra</i>	A	O	31.5
<i>Phytolacca decandra</i>	A	S	38.5
<i>Pimpinella anisum</i>	A	S	100.0
<i>Pimpinella anisum</i>	A	R	100.0
<i>Plantago coronopus</i>	A	R	36.0
<i>Plantago coronopus</i>	A	R	38.4
<i>Plantago coronopus</i>	A	O	53.6
<i>Plantago major</i>	A	R	65.3
<i>Plectranthus sp.</i>	A	O	74.2
<i>Poa compressa</i>	A	S	37.3

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Poa compressa	A	R	49.8
Poa compressa	A	O	100.0
Polygonum pensylvanicum	A	R	63.5
Polygonum pensylvanicum	A	O	72.9
Polygonum persicaria	A	S	27.5
Polygonum persicaria	A	O	43.0
Poterium sanguisorba	A	R	100.0
Poterium Sanquisorba	A	O	84.2
Pteridium aquilinum	A	O	45.1
Pteridium aquilinum	A	R	100.0
Pysalis ixocarpa	A	R	87.3
Raphanus raphanistrum	A	S	32.2
Raphanus sativus	A	R	25.3
Raphanus sativus	A	S	47.5
Raphanus sativus	A	R	83.5
Raphanus sativus	A	R	84.7
Raphanus Sativus	A	O	100.0
Rheum officinale	A	O	44.0
Ribes nigrum	A	O	100.0
Ribes nigrum	A	R	100.0
Ricinus communis	A	O	100.0
Rosa rugosa	A	R	25.2
Rosa rugosa	A	S	26.6
Rosa rugosa	A	O	83.2
Rosmarinus officinalis	A	R	68.2
Rubus idaeus	A	O	81.9
Rubus idaeus	A	R	73.4
Rumex Acetosa	A	S	24.2
Rumex Acetosa	A	R	85.5
Rumex Acetosa	A	O	100.0
Rumex crispus	A	O	46.7
Rumex crispus	A	R	100.0
Ruta graveolens	A	O	100.0
Saccharum officinarum	A	R	80.8
Salix purpurea	A	S	56.7
Salvia officinalis	A	S	24.1
Salvia officinalis	A	O	91.8
Salvia sclarea	A	O	99.7
Santolina chamaecyparissus	A	O	83.8

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Satureja hortensis	A	O	79.1
Satureja hortensis	A	R	100.0
Satureja montana	A	R	60.4
Satureja montana	A	O	76.1
Scorzonera hispanica	A	S	22.1
Secale cereale	A	R	47.2
Secale cereale	A	O	67.2
Senecio vulgaris	A	S	23.2
Senecio vulgaris	A	R	76.6
Sesamum indicum	A	R	100.0
Sesamum indicum	A	S	100.0
Solanum dulcamara	A	R	54.5
Solanum melnocerasum	A	S	45.4
Solanum melnocerasum	A	R	85.2
Solanum melnocerasum	A	O	88.7
Solanum melongena	A	S	42.5
Solanum melongena	A	R	85.9
Sonchus oleraceus	A	R	25.6
Sorghum caffrorum	A	R	39.6
Sorghum dochna	A	S	30.0
Sorghum dochna	A	R	48.0
Sorghum dochna	A	O	62.0
Sorghum durra	A	R	72.1
Sorghum durra	A	O	94.6
Sorghum sudanense	A	O	100.0
Spinacia oleracea	A	S	23.6
Stachys affinis	A	R	74.4
Stachys byzantina	A	R	48.4
Stachys byzantina	A	O	100.0
Stellaria graminea	A	S	20.8
Stellaria graminea	A	R	37.5
Stellaria media	A	R	49.0
Stellaria media	A	S	50.7
Symphytum officinale	A	R	44.2
Tanacetum cinerariifolium	A	R	100.0
Tanacetum parthenium	A	S	30.4
Tanacetum vulgare	A	S	28.6
Tanacetum vulgare	A	R	100.0
Taraxacum officinale	A	R	59.1

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Thymus praecox subsp arcticus</i>	A	R	43.5
<i>Thymus vulgaris</i>	A	S	30.1
<i>Thymus x citriodorus</i>	A	R	100.0
<i>Trichosanthes kirilowii</i>	A	S	29.2
<i>Trichosanthes kirilowii</i>	A	O	42.1
<i>Trigonella foenumgraecum</i>	A	O	53.4
<i>Triticosecal spp.</i>	A	R	44.8
<i>Triticum aestivum</i>	A	R	65.5
<i>Triticum durum</i>	A	O	53.9
<i>Triticum spelta</i>	A	R	26.4
<i>Triticum spelta</i>	A	S	36.7
<i>Triticum spelta</i>	A	O	51.9
<i>Tropaeolum majus</i>	A	R	25.8
<i>Urtica dioica</i>	A	O	22.9
<i>Urtica dioica</i>	A	S	30.6
<i>Vaccinium Corymbosum</i>	A	R	100.0
<i>Veratrum viride</i>	A	R	33.2
<i>Verbascum thapsus</i>	A	S	22.9
<i>Veronica beccabunga</i>	A	R	52.8
<i>Veronica officinalis</i>	A	R	84.2
<i>Vicia sativa</i>	A	R	100.0
<i>Vicia villosa</i>	A	S	32.9
<i>Vicia villosa</i>	A	R	100.0
<i>Vigna angularis</i>	A	R	54.0
<i>Vigna sesquipedalis</i>	A	S	48.3
<i>Vigna sesquipedalis</i>	A	R	73.0
<i>Vigna sesquipedalis</i>	A	O	96.6
<i>Vigna unguiculata</i>	A	R	70.7
<i>Vinca minor</i>	A	S	22.1
<i>Vinca minor</i>	A	R	88.4
<i>Vitis sp.</i>	A	S	20.9
<i>Vitis sp.</i>	A	R	30.4
<i>Xanthium sibiricum</i>	A	S	39.2
<i>Xanthium sibiricum</i>	A	R	47.8
<i>Xanthium sibiricum</i>	A	O	70.1
<i>Zea mays</i>	A	R	100.0
<i>Zea Mays</i>	A	O	100.0
<i>Abelmoschus esculentus</i>	G	S	21.6

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Abelmoschus esculentus	G	R	79.3
Achillea millefolium	G	O	62.7
Aconitum napellus	G	O	82.0
Aconus calamus	G	S	100.0
Ageratum conyzoides	G	S	49.3
Alcea rosea	G	R	64.4
Alchemilla mollis	G	S	21.5
Alchemilla mollis	G	R	30.2
Alchemilla mollis	G	O	55.7
Allium ampeloprasum	G	O	36.1
Allium ampeloprasum	G	R	52.8
Allium ascalonicum	G	O	68.9
Allium cepa	G	S	40.2
Allium cepa	G	R	66.4
Allium cepa	G	O	100.0
Allium grande	G	R	36.4
Allium sativum	G	S	29.5
Allium sativum	G	R	68.4
Allium sativum	G	O	100.0
Allium schoenoprasum	G	S	47.1
Allium schoenoprasum	G	R	61.7
Allium tuberosum	G	S	23.8
Allium tuberosum	G	O	54.5
Allium tuberosum	G	R	85.9
Aloe vera	G	R	53.6
Althaea officinalis	G	S	37.4
Althaea officinalis	G	S	42.4
Amaranthus caudatus	G	S	30.9
Amaranthus caudatus	G	O	56.7
Amaranthus gangeticus	G	S	23.1
Anethum graveolens	G	S	23.9
Angelica archangelica	G	S	22.0
Angelica archangelica	G	S	24.9
Apium graveolens	G	O	33.0
Apium graveolens	G	R	44.8
Apium graveolens	G	S	54.1
Apium graveolens	G	R	84.1
Aralia nudicaulis	G	R	51.8
Arctium minus	G	S	25.4

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Amoracia rusticana</i>	G	O	52.1
<i>Aronia melanocarpa</i>	G	S	22.5
<i>Aronia melanocarpa</i>	G	R	82.3
<i>Artemisia dracuncul</i>	G	R	53.6
<i>Artemisia dracunculus</i>	G	R	58.8
<i>Artemisia dracunculus</i>	G	S	100.0
<i>Artemisia dracunculus</i>	G	O	100.0
<i>Asclepias incarnata</i>	G	S	26.9
<i>Asparagus officinalis</i>	G	S	24.0
<i>Asparagus officinalis</i>	G	R	65.9
<i>Asparagus officinalis</i>	G	O	95.0
<i>Aster spp</i>	G	O	48.4
<i>Beckmannia eruciformis</i>	G	O	24.8
<i>Bellis perennis</i>	G	O	52.6
<i>Beta vulgaris</i>	G	S	45.3
<i>Beta vulgaris</i>	G	R	100.0
<i>Beta vulgaris spp. Maritima</i>	G	R	100.0
<i>Brassica cepticepa</i>	G	R	52.9
<i>Brassica chinensis</i>	G	R	41.9
<i>Brassica juncea</i>	G	R	22.8
<i>Brassica Napus</i>	G	S	22.9
<i>Brassica oleracea</i>	G	R	45.5
<i>Brassica oleracea</i>	G	R	47.1
<i>Brassica oleracea</i>	G	S	62.9
<i>Brassica oleracea</i>	G	R	77.9
<i>Brassica oleracea</i>	G	O	100.0
<i>Brassica rapa</i>	G	S	26.5
<i>Brassica rapa</i>	G	R	38.9
<i>Brassica Rapa</i>	G	R	53.6
<i>Calamintha nepeta</i>	G	S	20.4
<i>Calamintha nepeta</i>	G	O	78.0
<i>Camellia sinensis</i>	G	O	100.0
<i>Campanula rapunculus</i>	G	R	60.6
<i>Canna edulis</i>	G	O	78.1
<i>Capsella bursa-pastoris</i>	G	S	30.7
<i>Capsella bursa-pastoris</i>	G	R	60.6
<i>Capsicum annuum</i>	G	S	70.8
<i>Capsicum annuum</i>	G	O	80.0

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Capsicum annuum	G	R	100.0
Capsicum frutescens	G	S	63.2
Capsicum frutescens	G	R	100.0
Carthamus tinctorius	G	R	100.0
Centaurea solstitialis	G	S	46.4
Cerastium tomentosum	G	R	52.3
Chenopodium bonus-henricus	G	S	22.0
Chenopodium quinoa	G	S	31.0
Chenopodium quinoa	G	O	53.4
Chrysanthemum coronarium	G	R	76.2
Chrysanthemum coronarium	G	R	54.2
Cicer arietinum	G	S	23.1
Cichorium endivia subsp endivia	G	S	28.7
Cichorium endivia subsp endivia	G	O	68.7
Cichorium intybus	G	S	41.4
Cichorium intybus	G	O	62.1
Circlum arvense	G	S	25.3
Circlum arvense	G	R	59.3
Citrullus lanatus	G	S	24.8
Citrullus lanatus	G	R	41.1
Citrullus lanatus	G	R	100.0
Cosmos sulphureus	G	R	77.9
Cosmos sulphureus	G	S	79.4
Cucumis sativus	G	S	39.9
Cucumis sativus	G	S	39.9
Cucurbita maxima	G	S	33.9
Cucurbita maxima	G	R	43.4
Cucurbita maxima	G	O	100.0
Cucurbita moschata	G	S	41.3
Cucurbita pepo	G	S	42.8
Cucurbita pepo	G	S	45.4
Cucurbita Pepo	G	R	83.0
Cuminum cyminum	G	O	66.2
Curcuma zedoaria	G	R	33.9
Cymbopogon citratus	G	R	65.8
Cymbopogon martinii motia	G	S	41.4
Cymbopogon martinii motia	G	O	60.5
Dactylis glomerata	G	S	21.9
Dactylis glomerata	G	O	61.2

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Datura stramonium</i>	G	S	27.0
<i>Daucus carota</i>	G	O	21.3
<i>Daucus carota</i>	G	S	31.0
<i>Daucus carota</i>	G	R	100.0
<i>Digitalis purpurea</i>	G	S	30.9
<i>Dipsacus sativus</i>	G	O	63.6
<i>Dirca palustris</i>	G	O	23.1
<i>Dolichos Lablab</i>	G	S	33.0
<i>Dryopteris filix-mas</i>	G	R	100.0
<i>Echinacea purpurea</i>	G	R	93.4
<i>Eleusine coracana</i>	G	S	30.0
<i>Erigeron speciosus</i>	G	S	28.9
<i>Erthenatherum elatius</i>	G	S	55.6
<i>Eruca vesicaria</i>	G	R	54.7
<i>Eschscholzia californica</i>	G	S	47.9
<i>Eschscholzia californica</i>	G	O	75.9
<i>Fagopyrum tartaricum</i>	G	O	41.1
<i>Filipendula rubra</i>	G	R	38.5
<i>Foeniculum vulgare</i>	G	R	70.0
<i>Foeniculum Vulgare</i>	G	S	100.0
<i>Galinsoğa ciliata</i>	G	S	34.6
<i>Galinsoğa ciliata</i>	G	R	48.2
<i>Gautheria hispidula</i>	G	R	60.5
<i>Gautheria hispidula</i>	G	O	100.0
<i>Gautheria hispidula</i>	G	S	100.0
<i>Glaux maritima</i>	G	R	59.3
<i>Glycine max</i>	G	R	21.1
<i>Glycine max</i>	G	S	24.4
<i>Glycine max</i>	G	O	28.1
<i>Guizotia abyssinica</i>	G	S	26.0
<i>Guizotia abyssinica</i>	G	R	36.8
<i>Guizotia abyssinica</i>	G	O	100.0
<i>Hedeoma pulegioides</i>	G	O	94.6
<i>Helianthus annuus</i>	G	S	35.5
<i>Helianthus annuus</i>	G	O	75.0
<i>Helianthus annuus</i>	G	R	79.9
<i>Helianthus strumosus</i>	G	O	100.0
<i>Helianthus tuberosus</i>	G	R	64.2
<i>Helichrysum thianschanicum</i>	G	O	61.1

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Helleborus niger</i>	G	R	48.0
<i>Hordeum hexastichon</i>	G	S	26.8
<i>Hordeum vulgare</i>	G	O	65.4
<i>Hordeum vulgare</i> subsp. <i>Vulgare</i>	G	O	75.8
<i>Humulus lupulus</i>	G	S	26.0
<i>Hypericum henryi</i>	G	R	20.2
<i>Hypericum henryi</i>	G	O	71.1
<i>Hyssopus officinalis</i>	G	O	100.0
<i>Iberis amara</i>	G	S	21.2
<i>Inula helenium</i>	G	S	24.3
<i>Lactuca sativa</i>	G	R	100.0
<i>Lactuca serriola</i>	G	R	69.3
<i>Laportea canadensis</i>	G	R	100.0
<i>Lathyrus sylvestris</i>	G	O	39.6
<i>Lavandula angustifolia</i>	G	O	70.0
<i>Lavandula latifolia</i>	G	S	22.7
<i>Lepidium Sativum</i>	G	R	30.6
<i>Lepidium sativum</i>	G	S	53.3
<i>Levisticum officinale</i>	G	O	80.7
<i>Loium multiflorum</i>	G	O	34.5
<i>Lotus comiculatus</i>	G	S	32.9
<i>Lotus comiculatus</i>	G	O	100.0
<i>Lotus tetragonolobus</i>	G	R	79.9
<i>Lycopersicon esculentum</i>	G	S	28.2
<i>Lycopersicon esculentum</i>	G	R	75.4
<i>Lycopersicon pimpinellifolium</i>	G	R	81.4
<i>Malus hupehensis</i>	G	R	32.5
<i>Malus hupehensis</i>	G	S	41.2
<i>Malva moschata</i>	G	O	47.1
<i>Malva sylvestris</i>	G	S	23.1
<i>Malva verticillata</i>	G	R	39.9
<i>Matricaria recutita</i>	G	O	30.0
<i>Matricaria recutita</i>	G	S	71.3
<i>Melaleuca alternifolia</i>	G	O	58.3
<i>Melilotus alba</i>	G	S	41.1
<i>Melilotus albus</i>	G	O	88.8
<i>Melilotus albus</i>	G	R	100.0
<i>Melissa officinalis</i>	G	O	47.8
<i>Mentha arvensis</i>	G	R	33.9

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Mentha arvensis	G	O	63.3
Mentha piperita	G	S	32.3
Mentha piperita	G	O	85.9
Mentha piperita	G	R	100.0
Mentha spicata	G	S	28.9
Mentha spicata	G	R	37.5
Mentha suaveolens	G	R	25.6
Mentha suaveolens	G	O	70.3
Momordica charantia	G	R	52.9
Monarda didyma	G	S	22.0
Monarda didyma	G	O	100.0
Monarda fistulosa	G	O	26.0
Nepeta cataria	G	S	23.4
Nicotiana tabacum	G	S	45.2
Nigella sativa	G	R	94.7
Ocimum basilicum	G	S	23.0
Ocimum basilicum	G	O	100.0
Ocimum tenuiflorum	G	R	45.3
Oenothera biennis	G	R	54.3
Origanum majorana	G	O	100.0
Origanum majorana	G	R	100.0
Origanum vulgare	G	R	93.3
Origanum vulgare	G	O	93.5
Origanum vulgare	G	S	97.4
Oxalis Deppei	G	S	28.7
Oxalis Deppei	G	R	87.2
Oxalis Deppei	G	O	100.0
Oxyria digyna	G	R	54.5
Panicum miliaceum	G	O	71.1
Panicum miliaceum	G	R	100.0
Panicum miliaceum	G	S	100.0
Passiflora caerulea	G	S	26.3
Passiflora caerulea	G	R	72.1
Pastinaca sativa	G	S	24.3
Pastinaca sativa	G	R	90.2
Petroselinum crispum	G	R	87.6
Petroselinum crispum	G	O	100.0
Phalaris canariensis	G	R	100.0
Phalaris canariensis	G	O	100.0

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Phaseolus acutifolius	G	R	79.6
Phaseolus coccineus	G	S	28.3
Phaseolus coccineus	G	R	80.4
Phaseolus mungo	G	R	37.2
Phaseolus vulgaris	G	R	54.3
Phaseolus vulgaris	G	S	59.0
Phaseolus vulgaris	G	O	73.7
Phaseolus vulgaris	G	R	100.0
Phlox paniculata	G	R	37.7
Phlox paniculata	G	O	77.0
Phlox paniculata	G	R	80.8
Physalis ixocarpa	G	S	30.5
Physalis ixocarpa	G	R	78.3
Physalis ixocarpa	G	R	80.9
Physalis pruinosa	G	O	63.2
Phytolacca americana	G	S	36.1
Phytolacca americana	G	O	100.0
Pimpinella anisum	G	S	26.1
Pimpinella anisum	G	R	30.0
Pisum sativum	G	S	28.4
Plantago coronopus	G	R	27.8
Plantago coronopus	G	O	51.1
Plantago coronopus	G	R	67.5
Plantago major	G	S	30.3
Plantago major	G	O	64.6
Poa compressa	G	O	63.0
Poa compressa	G	S	67.4
Poa compressa	G	R	89.0
Poa pratensis	G	S	28.2
Polygonum aviculare	G	R	100.0
Polygonum pensylvanicum	G	S	27.7
Polygonum pensylvanicum	G	O	54.1
Polygonum persicaria	G	S	32.0
Polygonum persicaria	G	O	35.7
Polygonum persicaria	G	R	100.0
Portulaca oleracea	G	R	51.5
Poterium sanguisorba	G	O	89.9
Poterium sanguisorba	G	R	100.0

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Potentium sanguisorba	G	S	23.7
Prunella vulgaris	G	S	26.7
Prunus cerasifera	G	R	95.3
Raphanus Raphanistrum	G	R	41.7
Raphanus Raphanistrum	G	S	43.5
Raphanus sativus	G	R	41.0
Raphanus sativus	G	S	44.6
Raphanus sativus	G	R	50.5
Raphanus sativus	G	R	86.1
Raphanus sativus	G	O	100.0
Reseda odorata	G	O	58.3
Rheum officinale	G	O	30.7
Ribes nigrum	G	O	54.3
Ribes nigrum	G	R	63.8
Ribes Sylvestre	G	R	100.0
Ricinus communis	G	R	41.5
Ricinus communis	G	O	100.0
Rosmarinus officinalis	G	R	90.0
Rubus idaeus	G	S	37.1
Rubus idaeus	G	R	26.6
Rubus occidentalis	G	R	35.1
Rumex crispus	G	R	30.3
Rumex crispus	G	S	100.0
Rumex patientia	G	R	41.0
Rumex patientia	G	S	41.9
Ruta graveolens	G	S	47.9
Ruta graveolens	G	R	82.1
Saccharum officinarum	G	R	100.0
Salvia elegans	G	O	100.0
Salvia officinalis	G	S	35.3
Salvia officinalis	G	O	100.0
Salvia officinalis	G	R	100.0
Sambucus ebulus	G	R	53.9
Santolina chamaecyparissus	G	S	36.4
Santolina chamaecyparissus	G	O	69.5
Santolina chamaecyparissus	G	R	100.0
Saponaria officinalis	G	S	29.8
Satureja hortensis	G	O	97.4
Satureja hortensis	G	R	100.0

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Satureja montana	G	O	59.2
Satureja repandra	G	S	35.3
Satureja repandra	G	O	66.2
Scorzonera hispanica	G	S	24.5
Scrophularia nodosa	G	S	24.5
Scrophularia nodosa	G	O	30.0
Scrophularia nodosa	G	R	55.6
Scutellaria lateriflora	G	S	20.3
Scutellaria lateriflora	G	R	83.1
Secale cereale	G	O	51.1
Senecio vulgaris	G	R	42.5
Sesamum indicum	G	S	34.3
Sesamum indicum	G	R	44.5
Silene vulgaris	G	S	34.1
Sium sisarum	G	O	100.0
Solanum melancerasum	G	S	40.6
Solanum melancerasum	G	R	85.4
solanum melongena	G	S	58.2
solanum melongena	G	O	83.0
solanum melongena	G	R	85.6
Solanum tuberosum	G	O	40.2
Sonchus oleraceus	G	R	41.1
Sorghum dochna	G	S	25.0
Sorghum dochna	G	O	64.3
Sorghum dochna	G	R	100.0
sorghum durra	G	R	60.1
Sorghum durra	G	O	100.0
Sorghum sudanense	G	O	98.0
Spinacia oleracea	G	S	24.9
Spinacia oleracea	G	O	100.0
Stachys byzantina	G	R	78.8
Stellaria graminea	G	S	29.3
Stellaria media	G	S	33.4
Stellaria media	G	R	45.4
Symphytum officinale	G	O	57.5
Tanacetum cinerariifolium	G	R	100.0
Tanacetum parthenium	G	R	28.2
Tanacetum vulgare	G	S	25.2
Tanacetum vulgare	G	R	39.3

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Tanacetum vulgare	G	O	81.2
Taraxacum officinale	G	R	51.1
Thymus fragrantissimus	G	S	29.9
Thymus fragrantissimus	G	O	55.3
Thymus praecox subsp arcticus	G	S	27.7
Thymus serpyllum	G	R	74.9
Thymus vulgaris	G	S	23.3
Thymus vulgaris	G	R	86.4
Thymus x citrodorus	G	R	97.6
Tragopogon pinnatifidus	G	R	76.2
Trichosanthes kirilowii	G	O	87.7
Trigonella foenumgraecum	G	S	31.0
Trigonella foenumgraecum	G	O	84.0
Triticosecale spp	G	S	26.5
Triticosecale spp	G	O	73.5
Triticum aestivum	G	R	62.4
Triticum durum	G	O	51.9
Triticum spelta	G	S	24.5
Triticum spelta	G	O	32.9
Triticum turgidum	G	O	25.1
Tropaeolum majus	G	S	21.3
Tropaeolum majus	G	R	45.6
Urtica dioica	G	S	21.3
Urtica dioica	G	O	100.0
Valerianaella locusta	G	O	32.2
Veratrum viride	G	R	77.7
Verbascum thapsus	G	S	34.0
Veronica beccabunga	G	R	44.1
Veronica officinalis	G	S	38.8
Veronica officinalis	G	R	87.5
Viburnum trilobum	G	O	62.6
Vicia faba	G	S	22.2
Vicia sativa	G	O	74.8
Vicia sativa	G	R	100.0
Vicia villosa	G	R	100.0
Vigna angularis	G	R	65.2
Vigna sesquipedalis	G	S	35.1
Vigna sesquipedalis	G	R	73.8
Vigna sesquipedalis	G	O	100.0

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Vigna unguiculata</i>	G	S	65.9
<i>Vigna unguiculata</i>	G	R	84.5
<i>Vinca minor</i>	G	S	22.1
<i>Vitis sp.</i>	G	R	40.1
<i>Vitis sp.</i>	G	O	74.7
<i>Withania somnifera</i>	G	S	37.3
<i>Withania somnifera</i>	G	O	91.0
<i>Xanthium sibiricum</i>	G	S	38.4
<i>Xanthium sibiricum</i>	G	O	100.0
<i>Xanthium strumarium</i>	G	S	37.7
<i>Xanthium strumarium</i>	G	O	39.6
<i>Xanthium strumarium</i>	G	R	40.0
<i>Zea mays</i>	G	S	43.3
<i>Zea mays</i>	G	O	64.4
<i>Zea mays</i>	G	R	68.3
<i>Perilla frutescens</i>	T	R	100.0
<i>Abies lasiocarpa</i>	T	S	20.2
<i>Abies lasiocarpa</i>	T	R	59.1
<i>Achillea millefolium</i>	T	O	84.7
<i>Aconitum napellus</i>	T	O	22.0
<i>Aconitum napellus</i>	T	R	100.0
<i>Adiantum pedatum</i>	T	R	100.0
<i>Agaricus bisporus</i>	T	R	52.1
<i>Agaricus bisporus</i>	T	R	65.6
<i>Ageratum conyzoides</i>	T	S	26.7
<i>Agropyron repens</i>	T	S	30.2
<i>Agrostis Stolonifera</i>	T	O	100.0
<i>Alcea rosea</i>	T	R	63.7
<i>Alchemilla mollis</i>	T	R	28.6
<i>Allium ampeloprasum</i>	T	R	55.9
<i>Allium ampeloprasum</i>	T	O	60.4
<i>Allium ascalonicum</i>	T	S	20.4
<i>Allium ascalonicum</i>	T	O	73.4
<i>Allium cepa</i>	T	S	33.8
<i>Allium cepa</i>	T	S	35.6
<i>Allium cepa</i>	T	R	48.0
<i>Allium cepa</i>	T	R	78.6
<i>Allium grande</i>	T	R	32.4
<i>Allium schoenoprasum</i>	T	R	67.7

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Allium tuberosum</i>	T	S	38.8
<i>Allium tuberosum</i>	T	O	82.5
<i>Allium tuberosum</i>	T	R	85.2
<i>Aloe vera</i>	T	R	74.6
<i>Althaea officinalis</i>	T	S	37.7
<i>Althaea officinalis</i>	T	O	55.3
<i>Althaea officinalis</i>	T	R	72.3
<i>Amaranthus caudatus</i>	T	O	53.5
<i>Amaranthus gangeticus</i>	T	S	28.1
<i>Ananas comosus</i>	T	R	37.9
<i>Ananas comosus</i>	T	O	100.0
<i>angelica archangelica</i>	T	R	41.3
<i>Anthemis nobilis</i>	T	O	100.0
<i>Anthemis nobilis</i>	T	R	100.0
<i>Anthriscus cerefolium</i>	T	S	21.9
<i>Anthriscus cerefolium</i>	T	O	67.1
<i>Apium graveolens</i>	T	R	35.5
<i>Apium graveolens</i>	T	R	52.1
<i>Aralia cordata</i>	T	R	100.0
<i>Aralia nudicaulis</i>	T	R	31.2
<i>Arctium minus</i>	T	S	31.3
<i>Arctium minus</i>	T	O	73.7
<i>Amoracia rusticana</i>	T	O	49.9
<i>Artematherum elatius</i>	T	O	100.0
<i>Artemisia dracuncul</i>	T	S	100.0
<i>Asclepias incarnata</i>	T	S	32.3
<i>Asparagus officinalis</i>	T	S	48.2
<i>Atriplex hortensis</i>	T	R	28.4
<i>Avena sativa</i>	T	R	31.3
<i>Avena sativa</i>	T	O	70.6
<i>Avena sativa</i>	T	R	100.0
<i>Averrhoa carambola</i>	T	R	44.0
<i>Bellis perennis</i>	T	R	82.0
<i>Beta vulgaris</i>	T	S	33.7
<i>Beta vulgaris</i>	T	R	100.0
<i>Betula glandulosa</i>	T	O	53.5
<i>Boletus edulis</i>	T	S	21.8
<i>Borago officinalis</i>	T	S	42.3
<i>Borago officinalis</i>	T	R	78.5

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Brassica hirta</i>	T	R	53.1
<i>Brassica hirta</i>	T	O	68.9
<i>Brassica Napus</i>	T	S	45.1
<i>Brassica Napus</i>	T	R	82.9
<i>Brassica oleracea</i>	T	R	38.8
<i>Brassica oleracea</i>	T	R	49.7
<i>Brassica oleracea</i>	T	O	75.5
<i>Brassica oleracea</i>	T	R	77.0
<i>Brassica oleracea</i>	T	S	77.2
<i>Brassica rapa</i>	T	R	25.4
<i>Brassica rapa</i>	T	O	37.9
<i>Brassica rapa</i>	T	S	47.7
<i>Brassica rapa</i>	T	R	64.7
<i>Brassica rapa</i>	T	R	81.8
<i>Calamintha nepeta</i>	T	O	57.6
<i>Calendula officinalis</i>	T	S	32.6
<i>Camellia sinensis</i>	T	S	21.0
<i>Camellia sinensis</i>	T	R	43.8
<i>Camellia sinensis</i>	T	O	66.2
<i>Canna edulis</i>	T	O	100.0
<i>Cantharellus cibarius</i>	T	S	26.0
<i>Capsicum annuum</i>	T	S	54.6
<i>Capsicum annuum</i>	T	R	100.0
<i>Capsicum frutescens</i>	T	S	60.9
<i>Capsicum frutescens</i>	T	R	100.0
<i>Carex morrowii</i>	T	R	24.4
<i>Carica papaya</i>	T	S	20.8
<i>Carthamus tinctorius</i>	T	R	39.6
<i>Carya cordiformis</i>	T	R	100.0
<i>Cerastium tomentosum</i>	T	R	54.8
<i>Chaerophyllum bulbosum</i>	T	S	42.2
<i>Chaerophyllum bulbosum</i>	T	R	74.3
<i>Chelidonium majus</i>	T	S	20.3
<i>Chenopodium quinoa</i>	T	O	76.0
<i>Chrysanthemum coronarium</i>	T	S	30.6
<i>Chrysanthemum parthenium</i>	T	R	57.2
<i>chrysanthemum coronarium</i>	T	R	56.5
<i>Chrysanthemum coronarium</i>	T	R	81.6

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Cicer arietinum</i>	T	O	32.2
<i>Cichorium endivia</i> subsp. <i>endivia</i>	T	R	27.1
<i>Cichorium endivia</i> subsp. <i>endivia</i>	T	S	26.9
<i>Cichorium endivia</i> subsp. <i>endivia</i>	T	O	64.5
<i>Cichorium intybus</i>	T	S	22.7
<i>Cichorium intybus</i>	T	R	53.5
<i>Cimicifuga racemosa</i>	T	S	41.1
<i>Cimicifuga racemosa</i>	T	R	68.4
<i>Cirsium arvense</i>	T	S	42.5
<i>Cirsium arvense</i>	T	R	64.5
<i>Citrullus lanatus</i>	T	S	72.4
<i>Citrullus lanatus</i>	T	O	92.2
<i>Citrullus lanatus</i>	T	R	100.0
<i>Citrus limetoides</i>	T	O	77.1
<i>Citrus limon</i>	T	R	43.6
<i>Citrus paradisi</i>	T	S	21.8
<i>Citrus paradisi</i>	T	R	90.9
<i>Citrus sinensis</i>	T	R	46.7
<i>Colocasia</i> sp	T	R	43.4
<i>Colocasia</i> sp	T	O	84.3
<i>Corchorus olitorius</i>	T	R	22.7
<i>Coriandrum sativum</i>	T	S	20.4
<i>Cornus canadensis</i>	T	S	66.0
<i>Cosmos sulphureus</i>	T	R	47.1
<i>Crataegus submollis</i>	T	S	21.2
<i>Crataegus submollis</i>	T	O	94.3
<i>Cucumis anguria</i>	T	S	49.4
<i>Cucumis anguria</i>	T	R	84.1
<i>Cucumis melo</i>	T	S	56.6
<i>Cucumis melo</i>	T	R	92.4
<i>Cucumis melo</i>	T	O	100.0
<i>Cucumis metuliferus</i>	T	S	29.5
<i>Cucumis sativus</i>	T	S	28.3
<i>Cucurbita maxima</i>	T	S	26.7
<i>Cucurbita maxima</i>	T	O	34.7
<i>Cucurbita maxima</i>	T	R	62.1
<i>Cucurbita moschata</i>	T	R	30.7
<i>Cucurbita moschata</i>	T	S	33.4
<i>Cucurbita moschata</i>	T	S	48.3

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Cucurbita moschata	T	R	98.8
Cucurbita moschata	T	O	100.0
Cucurbita pepo	T	S	45.8
Cucurbita pepo	T	R	80.2
Cucurbita pepo	T	O	98.9
Cuminum cyminum	T	O	54.0
Curcuma zedoaria	T	S	100.0
Cymbopogon citratus	T	S	21.0
Cymbopogon martinii motia	T	S	27.5
Cynara scolymus	T	S	23.1
Cynara scolymus	T	O	83.4
Cyperus esculentus	T	R	100.0
Dactylis Glomerata	T	S	30.8
Dactylis Glomerata	T	O	34.5
Daucus carota	T	S	27.1
Daucus carota	T	R	56.8
Daucus Carota	T	O	100.0
Digitalis purpurea	T	S	38.4
Dirca palustris	T	S	45.9
Dolichos lablab	T	S	46.6
Dryopteris filix-mas	T	O	29.5
Dryopteris filix-mas	T	R	100.0
Echinacea purpurea	T	R	59.3
Echinacea purpurea	T	O	87.8
Eleusine coracana	T	S	28.6
Eleusine coracana	T	R	80.0
Erigeron canadensis	T	O	100.0
Eruca vesicaria	T	R	60.5
Erysimum perofskianum	T	S	28.2
Erysimum perofskianum	T	R	85.2
Eschscholzia californica	T	S	49.9
Eschscholzia californica	T	O	74.5
Fagopyrum esculentum	T	O	52.9
Fagopyrum tartaricum	T	S	25.6
Fagopyrum tartaricum	T	R	68.4
Fagopyrum tartaricum	T	O	100.0
Festuca rubra	T	O	51.6
Festuca rubra	T	S	56.6
Festuca rubra	T	R	71.7

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Foeniculum vulgare</i>	T	S	36.5
<i>Foeniculum vulgare</i>	T	R	41.4
<i>Foeniculum vulgare</i>	T	O	100.0
<i>Fortunella spp</i>	T	R	53.9
<i>Fragaria xananassa</i>	T	R	28.1
<i>Galinsoga ciliata</i>	T	S	43.2
<i>Galinsoga ciliata</i>	T	R	73.3
<i>Galium odoratum</i>	T	S	42.0
<i>Galium odoratum</i>	T	O	94.2
<i>Glaux Maritima</i>	T	R	24.8
<i>Glycine max</i>	T	R	37.2
<i>Glycine max</i>	T	O	100.0
<i>Glycine max</i>	T	R	100.0
<i>Glycine max</i>	T	S	100.0
<i>Gossypium herbaceum</i>	T	R	48.7
<i>Guizotia abyssinica</i>	T	S	26.8
<i>Guizotia abyssinica</i>	T	R	100.0
<i>Hedeoma pulegioides</i>	T	R	20.3
<i>Hedeoma pulegioides</i>	T	O	72.7
<i>Helianthus annuus</i>	T	R	56.1
<i>Helianthus strumosus</i>	T	O	100.0
<i>Helianthus tuberosus</i>	T	S	25.3
<i>Helianthus tuberosus</i>	T	R	28.1
<i>Helianthus tuberosus</i>	T	O	78.6
<i>Helianthus tuberosus</i>	T	R	91.5
<i>Helichrysum angustifolium</i>	T	R	83.4
<i>Helichrysum angustifolium</i>	T	S	88.3
<i>Helichrysum thianschanicum</i>	T	O	26.0
<i>Heliotropium arborescens</i>	T	R	100.0
<i>Helleborus niger</i>	T	R	23.0
<i>Hibiscus cannabinus</i>	T	R	37.9
<i>Hordeum vulgare</i>	T	O	75.9
<i>Hordeum vulgare supsp vulgare</i>	T	S	20.5
<i>Hordeum vulgare supsp vulgare</i>	T	O	62.3
<i>Humulus lupulus</i>	T	S	44.7
<i>Humulus lupulus</i>	T	O	70.6
<i>Hypericum henryi</i>	T	O	76.8
<i>Hypericum henryi</i>	T	R	99.8
<i>Hypericum perforatum</i>	T	R	38.8

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Hyssopus officinalis</i>	T	O	100.0
<i>Iberis amara</i>	T	O	100.0
<i>Juniperus communis</i>	T	S	100.0
<i>Kochia scoparia</i>	T	S	25.2
<i>Koeleria glauca</i>	T	S	23.1
<i>Lactuca sativa</i>	T	R	70.5
<i>Lactuca serriola</i>	T	R	34.1
<i>Laportea canadensis</i>	T	R	61.3
<i>Lathyrus sylvestris</i>	T	R	48.6
<i>Laurus nobilis</i>	T	O	73.6
<i>Lavandula angustifolia</i>	T	R	35.0
<i>Lavandula angustifolia</i>	T	O	100.0
<i>Lavandula latifolia</i>	T	O	77.1
<i>Lepidium sativum</i>	T	S	35.2
<i>Lepidium sativum</i>	T	R	48.1
<i>Lepidium sativum</i>	T	O	72.9
<i>Levisticum officinale</i>	T	S	38.7
<i>Levisticum officinale</i>	T	O	60.3
<i>Linum usitatissimum</i>	T	R	24.7
<i>Lolium multiflorum</i>	T	S	39.8
<i>Lolium multiflorum</i>	T	O	74.1
<i>Lonicera ramosissima</i>	T	S	34.4
<i>Lonicera ramosissima</i>	T	O	80.5
<i>Lonicera syringantha</i>	T	R	58.4
<i>Lotus corniculatus</i>	T	S	36.0
<i>Lotus corniculatus</i>	T	O	100.0
<i>Lotus tetragonolobus</i>	T	R	76.1
<i>Lunaria annua</i>	T	R	47.4
<i>Lycopersicon esculentum</i>	T	R	69.7
<i>Lycopersicon pimpinellifolium</i>	T	R	58.7
<i>Malus hupehensis</i>	T	R	53.1
<i>Malus hupehensis</i>	T	S	100.0
<i>Malus sp.</i>	T	R	72.6
<i>Malva moschata</i>	T	O	96.7
<i>Malva verticillata</i>	T	R	35.8
<i>Manihot esculenta</i>	T	R	53.7
<i>Melaleuca alternifolia</i>	T	S	21.5
<i>Melaleuca alternifolia</i>	T	O	78.7

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Melilotus albus	T	R	79.7
Melilotus officinalis	T	S	34.6
Melilotus officinalis	T	R	100.0
Melissa officinalis	T	O	100.0
Mentha piperita	T	S	24.5
Mentha pulegium	T	O	100.0
Mentha suaveolens	T	O	20.9
Miscanthus sinensis Andress	T	S	69.1
Momordica charantia	T	R	54.9
Monarda didyma	T	S	31.3
Monarda fistulosa	T	S	21.3
Monarda fistulosa	T	O	100.0
Montia perfoliata	T	R	67.2
Musa paradisiaca	T	R	47.3
nasturtium officinale	T	S	55.7
Nepeta cataria	T	S	20.7
Nepeta cataria	T	S	69.0
Nepeta cataria	T	O	100.0
Nicotiana rustica	T	S	52.8
Nicotiana rustica	T	R	88.1
Nicotiana tabacum	T	S	50.3
Nicotiana tabacum	T	R	91.5
Nigella sativa	T	R	34.2
Nigella sativa	T	R	90.3
Nigella sativa	T	R	100.0
Ocimum Basilicum	T	S	21.6
Ocimum Basilicum	T	O	100.0
Ocimum tenuiflorum	T	R	44.5
Oenothera biennis	T	R	48.2
Onobrychis vicifolia	T	S	34.4
Onobrychis vicifolia	T	O	35.6
Opuntia sp.	T	S	23.5
Origanum vulgare	T	S	20.7
Origanum vulgare	T	R	76.7
Origanum vulgare	T	O	100.0
Oryza sativa	T	R	60.8
Oxalis Deppei	T	S	22.2
Oxalis Deppei	T	R	81.4
Passiflora caerulea	T	S	36.9

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Passiflora caerulea	T	R	87.0
Passiflora spp	T	R	54.6
Pastinaca sativa	T	S	24.8
Pastinaca sativa	T	R	74.7
Peroselinum crispum	T	R	85.2
Peroselinum crispum	T	O	100.0
Persea americana	T	R	43.1
Petasites Japonicus	T	S	21.9
Petroselinum crispum	T	R	52.8
Peucedanum oreaselinum	T	R	41.9
Phalaris canariensis	T	R	41.1
Phalaris canariensis	T	O	100.0
Phaseolus acutifolius	T	R	88.2
Phaseolus coccineus	T	S	22.2
Phaseolus coccineus	T	R	36.4
Phaseolus coccineus	T	R	86.7
Phaseolus coccineus	T	O	100.0
Phaseolus mungo	T	S	43.0
Phaseolus vulgaris	T	S	62.9
Phaseolus vulgaris	T	R	71.9
Phaseolus vulgaris	T	R	73.0
Phaseolus vulgaris	T	O	100.0
Phlox paniculata	T	R	23.1
Phlox paniculata	T	R	92.8
Physalis alkekengi	T	R	39.5
Physalis ixocarpa	T	R	36.7
Physalis ixocarpa	T	R	75.9
Physalis pruinosa	T	R	65.6
Physalis pruinosa	T	R	71.0
Physalis pruinosa	T	O	100.0
Physalis pruinosa	T	O	100.0
Phytolacca decandra	T	S	39.3
Phytolacca decandra	T	O	42.0
Pimpinella anisum	T	S	27.9
Pimpinella anisum	T	R	35.8
Pimpinella anisum	T	O	49.9
Pimpinella anisum	T	R	55.5
Pisum sativum	T	S	22.3

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Plantago coronopus</i>	T	R	35.2
<i>Plantago coronopus</i>	T	R	46.0
<i>Plantago coronopus</i>	T	O	73.5
<i>Plantago major</i>	T	S	22.3
<i>Plectranthus sp.</i>	T	S	59.2
<i>Pleurotus spp</i>	T	R	26.6
<i>Poa compressa</i>	T	S	33.4
<i>Poa compressa</i>	T	R	75.7
<i>Poa compressa</i>	T	O	100.0
<i>Poa pratensis</i>	T	S	25.4
<i>Polygonum pensylvanicum</i>	T	O	66.8
<i>Polygonum pensylvanicum</i>	T	R	73.3
<i>Polygonum persicaria</i>	T	S	27.1
<i>Polygonum persicaria</i>	T	O	50.8
<i>Populus incassata</i>	T	O	74.3
<i>Populus incassata</i>	T	S	100.0
<i>Prunus armeniaca</i>	T	R	55.0
<i>Prunus cerasus</i>	T	O	100.0
<i>Prunus persica</i>	T	S	26.0
<i>Prunus persica</i>	T	R	46.2
<i>Psoralea corylifolia</i>	T	S	47.4
<i>Pteridium aquilinum</i>	T	R	100.0
<i>Pyrus communis</i>	T	R	42.9
<i>Raphanus raphanistrum</i>	T	S	24.4
<i>Raphanus raphanistrum</i>	T	R	56.9
<i>Raphanus raphanistrum</i>	T	O	62.1
<i>Raphanus raphanistrum</i>	T	O	100.0
<i>Raphanus sativus</i>	T	R	48.9
<i>Raphanus sativus</i>	T	S	59.8
<i>Raphanus sativus</i>	T	R	81.6
<i>Reseda odorata</i>	T	O	71.3
<i>Rhamnus frangula</i>	T	O	44.6
<i>Rhamnus frangula</i>	T	R	74.4
<i>Rheum officinale</i>	T	O	73.9
<i>Rheum officinale</i>	T	S	100.0
<i>Ricinus communis</i>	T	O	100.0
<i>Rosmarinus officinalis</i>	T	O	100.0
<i>Rosmarinus officinalis</i>	T	R	100.0
<i>Rubus idaeus</i>	T	R	78.1

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Rumex acetosella	T	R	42.2
Rumex crispus	T	O	73.1
Rumex patientia	T	S	52.0
Ruta graveolens	T	S	34.7
Ruta graveolens	T	O	100.0
Saccharum officinarum	T	S	59.6
Saccharum officinarum	T	R	66.1
Salvia elegans	T	S	36.3
Salvia elegans	T	O	44.3
Salvia officinalis	T	S	28.2
Salvia officinalis	T	O	100.0
Salvia sclarea	T	R	38.6
Sambucus canadensis	T	S	36.3
Sambucus canadensis	T	R	64.5
Sambucus canadensis	T	O	100.0
Sanguisorba minor	T	O	73.1
Sanguisorba minor	T	R	100.0
Santolina chamaecyparissus	T	O	27.7
Santolina chamaecyparissus	T	R	100.0
Saponaria officinalis	T	R	100.0
Satureja hortensis	T	O	62.2
Satureja hortensis	T	R	100.0
Satureja montana	T	S	34.7
Satureja montana	T	O	36.3
Satureja montana	T	R	100.0
Satureja repandra	T	O	47.0
Satureja repandra	T	S	47.6
Satureja repandra	T	R	84.6
Scolymus hispanicus	T	R	35.8
Scorzonera hispanica	T	R	99.4
Scrophularia nodosa	T	S	29.1
Scrophularia nodosa	T	R	90.1
Scrophularia nodosa	T	O	100.0
Scutellaria lateriflora	T	S	30.9
Scutellaria lateriflora	T	R	63.9
Secale cereale	T	O	100.0
Senecio vulgaris	T	S	24.7
Senecio vulgaris	T	R	32.2
Sesamum indicum	T	R	100.0

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
<i>Silene vulgaris</i>	T	S	25.6
<i>Sium sisarum</i>	T	O	81.4
<i>Sium sisarum</i>	T	O	100.0
<i>Solanum melancerasum</i>	T	S	28.0
<i>Solanum melancerasum</i>	T	R	78.8
<i>Solanum melancerasum</i>	T	R	99.6
<i>Solanum melongena</i>	T	S	70.5
<i>Sorghum caffrorum</i>	T	S	28.1
<i>Sorghum dochna</i>	T	R	40.6
<i>Sorghum dochna</i>	T	O	100.0
<i>Sorghum durra</i>	T	R	29.7
<i>Sorghum durra</i>	T	O	78.9
<i>Sorghum sudanense</i>	T	R	74.6
<i>Sorghum sudanense</i>	T	O	100.0
<i>Spinacia oleracea</i>	T	S	28.5
<i>Spinacia oleracea</i>	T	O	62.7
<i>Stachys byzantina</i>	T	R	66.9
<i>Stachys byzantina</i>	T	O	100.0
<i>Stellaria media</i>	T	S	21.4
<i>Stellaria media</i>	T	R	87.1
<i>Stipa capillata</i>	T	R	37.5
<i>Symphytum officinale</i>	T	O	58.5
<i>Tanacetum cinerariifolium</i>	T	O	100.0
<i>Tanacetum cinerariifolium</i>	T	R	100.0
<i>Tanacetum parthenium</i>	T	R	100.0
<i>Tanacetum vulgare</i>	T	R	20.8
<i>Taraxacum officinale</i>	T	R	76.3
<i>Teucrium chamaedrys</i>	T	O	75.6
<i>Thalpsi arvense</i>	T	O	64.1
<i>Thymus fragantissimus</i>	T	S	21.4
<i>Thymus praecox subsp arcticus</i>	T	S	36.4
<i>Thymus pseudolanuginosus</i>	T	S	21.1
<i>Thymus pseudolanuginosus</i>	T	O	75.4
<i>Thymus serpyllum</i>	T	O	64.2
<i>Thymus vulgaris</i>	T	R	71.5
<i>Thymus X citriodorus</i>	T	S	27.6
<i>Tragopogon portifolius</i>	T	S	44.8
<i>Tragopogon portifolius</i>	T	O	39.1
<i>Tragopogon portifolius</i>	T	R	57.9

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Tragopogon sp.	T	R	20.0
Trifolium repens	T	R	79.7
Trigonella foenum graecum	T	O	28.4
Trigonella foenum graecum	T	S	34.8
Triticosecale spp	T	S	28.5
Triticosecale spp	T	O	100.0
Triticum aestivum	T	R	32.9
Triticum aestivum	T	O	67.7
Triticum durum	T	O	47.7
Triticum spelta	T	O	37.1
Triticum turgidum	T	O	41.2
Tropaeolum majus	T	S	42.7
Tropaeolum majus	T	R	77.6
Tsuga diversifolia	T	R	53.4
Typha latifolia	T	S	29.2
Urtica dioica	T	S	29.5
Vaccinium angustifolium	T	R	59.4
Vaccinium angustifolium	T	R	100.0
Vaccinium macrocarpon	T	S	51.1
Vaccinium macrocarpon	T	O	64.7
Valerianella locusta	T	S	22.7
Valerianella locusta	T	O	24.8
Veronica beccabunga	T	R	33.3
Veronica officinalis	T	R	59.2
Veronica officinalis	T	O	100.0
Viburnum trilobum	T	O	71.2
Vicia faba	T	S	25.5
Vicia faba	T	R	27.0
Vicia sativa	T	O	56.6
Vicia villosa	T	R	100.0
Vigna angularis	T	R	49.2
Vigna sesquipedalis	T	R	77.4
Vigna sesquipedalis	T	O	100.0
Vigna unguiculata	T	S	27.2
Vigna unguiculata	T	R	59.0
Vinca minor	T	R	39.2
Vitis sp.	T	R	31.9
Vitis sp.	T	S	36.3

Table 2
MMP-2

Latin name	Stress	Extract	Inhibition (%)
Vitis sp.	T	O	72.2
Weigela coraeensis	T	S	32.9
Weigela coraeensis	T	R	61.5
Withania somnifera	T	S	36.1
Withania somnifera	T	O	83.3
Xanthium sibiricum	T	S	32.1
Xanthium sibiricum	T	R	33.2
Xanthium sibiricum	T	O	62.4
Xanthium strumarium	T	S	47.2
Xanthium strumarium	T	O	74.3
Zea mays	T	R	55.7
Zea mays	T	O	100.0
Zingiber officinale	T	R	79.0

Table 3
MMP-3

Latin name	Stress	Extract	Inhibition (%)
Achillea millefolium	A	O	21.4
Allium Tuberosum	A	S	32.5
Anethum graveolens	A	S	26.0
Anthemis nobilis	A	R	20.3
Anthemis tinctoria	A	R	58.0
Apium graveolens	A	R	34.1
Arctium minus	A	R	53.9
Arctium minus	A	O	100.0
Arctostaphylos uva-ursi	A	S	58.6
Aronia melanocarpa	A	R	32.2
Artemisia Absinthium	A	O	100.0
Artemisia dracunculul	A	R	23.4
Artemisia dracunculul	A	S	63.0
Aster sp	A	O	42.4
Atropa belladonna	A	O	23.8
Beta vulgaris	A	S	24.1
Beta vulgaris	A	O	42.9
Beta vulgaris	A	O	94.3
Beta vulgaris	A	R	97.9
Beta vulgaris var. condivata	A	O	21.2
Brassica napus	A	S	25.0
Brassica napus	A	O	100.0
Brassica oleracea	A	S	39.9
Canna edulis	A	S	39.6
Capsicum annuum	A	S	35.4
Capsicum frutescens	A	S	27.2
Cichorium intybus	A	O	20.2
Cichorium intybus	A	R	26.5
Cichorium intybus	A	S	28.2
Citrullus lanatus	A	S	21.7
Citrullus lanatus	A	O	27.8
Citrullus lanatus	A	R	34.4
Coix Lacryma-Jobi	A	S	37.3
Coix Lacryma-Jobi	A	O	78.1
Cosmos sulphureus	A	R	26.8
Crataegus submolliis	A	S	22.3
Crataegus submolliis	A	R	61.6
Cucumis anguria	A	S	27.8
Cucurbita Maxima	A	S	28.9

Table 3
MMP-3

Cucurbita moschata	A	S	32.9
Cucurbita pepo	A	S	50.9
Datisca cannabina	A	R	43.3
Datisca cannabina	A	S	100.0
Digitalis purpurea	A	R	20.0
Dipsacus sativus	A	R	64.8
Dirca palustris	A	S	29.6
Dryopteris filix-mas	A	R	22.0
Dryopteris filix-mas	A	O	32.8
Echinacea purpurea	A	O	100.0
Fagopyrum tataricum	A	R	28.3
Fagopyrum tataricum	A	O	29.7
Filipendula rubra	A	S	43.7
Filipendula rubra	A	R	63.2
Fragaria x ananassa	A	R	41.5
Fragaria x ananassa	A	S	67.1
Fragaria x ananassa	A	O	99.6
Fragaria x ananassa	A	R	31.7
Gaultheria hispidula	A	R	50.5
Glycyrrhiza glabra	A	R	56.2
Hedeoma pulegioides	A	O	51.7
Hellanthus tuberosus	A	O	22.9
Hordeum vulgare subsp vulgare	A	S	36.0
Hypericum henryi	A	R	67.2
Hypericum perforatum	A	R	31.7
Hyssopus officinalis	A	R	21.6
Iris versicolor	A	R	53.6
Isatis tinctoria	A	S	32.9
Levisticum officinale	A	O	46.7
Lotus tetragonolobus	A	R	26.2
Matricaria recutita	A	S	43.5
Matteucia pensylvanica	A	R	24.7
Melissa officinalis	A	S	30.3
Mentha suaveolens	A	R	91.7
Nepeta cataria	A	S	30.3
Nigella sativa	A	O	26.0
Ocinum tenuiflorum	A	O	33.0
Ocinum tenuiflorum	A	R	49.8
Perilla frutescens	A	R	34.8
Petasites japonicus	A	R	38.0

Table 3
MMP-3

Phaseolus mungo	A	O	62.6
Phaseolus vulgaris	A	S	21.2
Phaseolus vulgaris	A	O	50.6
Phaseolus Vulgaris	A	R	100.0
Phlox paniculata	A	S	46.4
Physalis alkekengi	A	O	37.5
Plantago major	A	O	27.3
Polygonum aviculare linné	A	S	24.8
Polygonum persicaria	A	S	59.1
Potentilla anserina	A	R	40.1
Poterium sanguisorba	A	R	75.7
Prunus cerasifera	A	R	80.0
Ptaridium aquilinus	A	R	39.6
Raphanus raphanistrum	A	S	28.2
Raphanus sativus	A	S	64.4
Ribes nigrum	A	O	47.6
ribes uva-crispa	A	R	21.0
ribes uva-crispa	A	O	100.0
Rosa rugosa	A	S	21.4
Rosmarinus officinalis	A	R	27.3
Rubus allegheniensis	A	R	81.0
Rubus arcticus	A	R	51.0
Rubus canadensis	A	R	48.8
Rubus idaeus	A	S	28.5
Rubus idaeus	A	R	35.1
Rubus pubescens	A	O	50.4
Rubus thibetanus	A	O	39.1
Rumex patientia	A	S	24.8
Ruta graveolens	A	O	56.1
Salvia officinalis	A	R	43.2
Santolina chamaecyparissus	A	R	27.0
Scutellaria lateriflora	A	R	53.5
Solanum melongena	A	S	21.8
Solidago canadensis	A	S	27.4
Stachys affinis	A	S	100.0
Stellaria media	A	O	24.4
Tanacetum vulgare	A	R	62.1
Thymus praecox subsp arcticus	A	S	28.4
Thymus praecox subsp arcticus	A	O	31.8
Trichosanthes kirilowii	A	S	23.2

Table 3
MMP-3

Vaccinium Corymbosum	A	R	100.0
Vaccinium macrocarpon	A	S	48.6
Vaccinium angustifolium	A	R	56.6
Vigna angularia	A	O	23.1
Vigna sesquipedalis	A	O	37.8
Vigna unguiculata	A	S	52.5
Vinca minor	A	O	23.2
Vitis sp.	A	S	20.8
Vitis sp.	A	O	21.5
Vitis sp.	A	R	33.6
Xanthium sibiricum	A	S	27.3
Aconitum napellus	G	O	59.0
Agropyron repens	G	O	69.4
Alchemilla mollis	G	S	30.6
Alchemilla mollis	G	O	73.3
Allium grande	G	O	33.4
Anethum graveolens	G	S	40.5
Aronia melanocarpa	G	O	100.0
Artemisia absinthium	G	S	31.3
Artemisia absinthium	G	O	67.9
Artemisia dracunculul	G	S	100.0
Atropa belladonna	G	S	41.2
Bellis perennis	G	S	48.4
Brassica oleracea	G	S	26.4
Brassica oleracea	G	O	40.6
Brassica rapa	G	S	21.4
Capsicum annuum	G	S	35.0
Capsicum annuum	G	S	35.7
Capsicum frutescens	G	S	27.5
Chelidonium majus	G	O	34.7
Cichorium intybus	G	R	34.4
Colx Lacryma-Jobi	G	S	20.2
Cosmos sulphureus	G	O	32.9
Crataegus submollis	G	S	25.6
Crataegus submollis	G	R	28.6
Cucumis anguria	G	S	33.6
Cucurbita maxima	G	S	44.6
Cucurbita moschata	G	S	33.4
Cucurbita pepo	G	S	25.3
Cymbopogon citratus	G	S	30.3

Table 3
MMP-3

Cymbopogon martinii	G	S	61.1
Daucus carota	G	O	30.0
Dryopteris filix-mas	G	S	26.0
Dryopteris filix-mas	G	R	45.3
Echinacea purpurea	G	O	51.8
Echinochloa frumentacea	G	S	30.3
Fagopyrum esculentum	G	R	50.9
Fagopyrum tartaricum	G	O	44.0
Fagopyrum tartaricum	G	R	46.0
Filipendula rubra	G	S	53.1
Filipendula rubra	G	R	58.7
Forsythia intermedia	G	O	52.9
Fragaria x ananassa	G	R	40.7
Fragaria x ananassa	G	R	28.1
Gaultheria hispidula	G	R	72.8
Gaultheria hispidula	G	O	100.0
Gaultheria procumbens	G	R	24.1
Glycine max	G	S	31.2
Glycyrrhiza glabra	G	R	37.1
Guizotia abyssinica	G	R	35.4
Hamamelis virginiana	G	S	29.1
Hamamelis virginiana	G	R	67.1
Helenium hoopesii	G	R	39.8
Helianthus tuberosus	G	O	32.8
Hordeum hexastichon	G	S	60.9
Humulus lupulus	G	R	61.2
Humulus lupulus	G	S	90.5
Hypericum henryi	G	R	100.0
Hypericum perforatum	G	R	43.4
Hyssopus officinalis	G	S	25.1
Hyssopus officinalis	G	O	48.2
Iris versicolor	G	R	47.0
Isatis tinctoria	G	S	32.1
Lavandula angustifolia	G	S	43.9
Levisticum officinale	G	O	51.4
Malus hupehensis	G	S	24.2
Malus hupehensis	G	R	37.2
Malva sylvestris	G	O	73.7
Matricaria recutita	G	S	31.5
Meibomia alternifolia	G	S	21.5

Table 3
MMP-3

Melissa officinalis	G	S	32.8
Melissa officinalis	G	R	44.8
Melissa officinalis	G	O	82.4
Mentha piperita	G	R	77.3
Mentha pulegium	G	R	41.1
Monarda didyma	G	S	31.8
Nepeta cataria	G	R	25.8
Nepeta cataria	G	O	84.9
Nigella sativa	G	O	44.9
Ocimum tenuiflorum	G	R	23.7
Oenothera biennis	G	S	25.6
Origanum vulgare	G	S	28.6
Origanum vulgare	G	R	31.2
Pennisetum alopecuroides	G	S	49.9
Petroselinum crispum	G	S	31.5
Peucedanum oreaselinum	G	R	68.3
Phaseolus acutifolius	G	R	25.4
Phaseolus acutifolius	G	O	61.8
Phaseolus vulgaris	G	O	24.4
Phaseolus vulgaris	G	S	35.6
Phlox paniculata	G	S	27.2
Physalis alkekengi	G	R	26.1
Physalis alkekengi	G	O	54.9
Plantago major	G	O	55.9
Plectranthus sp.	G	R	23.0
Polygonum persicaria	G	S	41.1
Potentilla anserina	G	R	55.4
Poterium sanguisorba	G	R	76.4
Prunus cerasifera	G	R	55.3
Plantidium aquilinus	G	R	44.5
Rhaphanus sativus	G	O	98.1
Rheum X cultorum	G	R	27.0
Ribes nidigrolaria	G	R	22.0
Ribes Silvestris	G	R	88.8
Rosmarinus officinalis	G	R	39.4
Rubus idaeus	G	S	100.0
Rubus idaeus	G	O	37.0
Rubus Phoenicalasius	G	R	24.9
Rubus pubescens	G	O	23.0
Rubus thibetanus	G	O	41.2

Table 3
MMP-3

Rumex patientia	G	S	36.2
Salvia officinalis	G	O	34.5
Salvia officinalis	G	R	89.5
Sanguisorba officinalis	G	S	46.8
Santolina chamaecyparissus	G	R	33.7
Secale cereale	G	S	24.4
Senecio vulgaris	G	R	37.6
Solanum melongena	G	S	21.1
Solanum tuberosum	G	S	27.6
Sorghum dochna	G	S	23.7
Sorghum dochna	G	R	56.3
Symphitum officinale	G	S	25.2
Teucrium chamaedrys	G	S	75.4
Thymus praecox subsp arcticus	G	S	28.4
Thymus praecox subsp arcticus	G	O	52.1
Thymus x citriodorus	G	R	25.3
Triticum durum	G	S	21.9
Triticum turgidum	G	O	80.2
Vaccinium angustifolium	G	R	47.6
Vaccinium angustifolium	G	R	48.1
Vaccinium angustifolium	G	R	71.0
Vaccinium corymbosum	G	R	60.6
Vaccinium corymbosum	G	R	61.7
Vaccinium corymbosum	G	O	99.4
Vaccinium macrocarpon	G	R	100.0
Vaccinium angustifolium	G	O	24.4
Vaccinium angustifolium	G	R	41.5
Valeriana officinalis	G	R	33.5
Veronica officinalis	G	S	27.0
Vicia faba	G	O	31.2
Vicia faba	G	R	44.7
Vigna angularia	G	O	40.8
Vigna angularis	G	S	39.4
Vigna unguiculata	G	O	26.1
Vitis sp.	G	R	62.4
Vitis sp.	G	S	63.3
Vitis sp.	G	O	82.0
Withania somnifera	G	S	22.4
Xanthium strumarium	G	S	20.7
Zea mays	G	S	26.1

Table 3
MMP-3

Zea mays	G	R	67.5
Abies lasiocarpa	T	R	46.2
Acorus calamus	T	R	21.8
Actinidia arguta	T	R	64.6
Agropyron repens	T	O	48.3
Alchemilla mollis	T	R	100.0
Alchemilla mollis	T	O	100.0
Allium cepa	T	R	39.8
Allium cepa	T	O	45.2
Allium tuberosum	T	R	28.2
Allium tuberosum	T	S	28.8
Alpinia officinarum	T	S	26.4
Amelanchier alnifolia	T	R	78.3
Amelanchier sanguinea x A. laevis	T	R	66.5
angelica archangelica	T	S	25.2
Apium graveolens	T	R	43.3
Aralia cordata	T	S	31.5
Aralia nudicaulis	T	S	37.7
Aralia nudicaulis	T	R	48.5
Aronia melanocarpa	T	S	26.0
Aronia melanocarpa	T	O	53.3
Aronia prunifolia	T	R	79.2
Artemisia absinthium	T	O	100.0
Artemisia dracuncul	T	S	42.0
Ayperus esculentus	T	O	67.8
Beta vulgaris	T	R	27.9
Beta vulgaris	T	S	33.2
Beta vulgaris	T	O	53.0
Borago officinalis	T	O	55.7
Brassica Napus	T	O	71.9
Brassica oleracea	T	O	37.0
Brassica oleracea	T	S	46.9
Brassica rapa	T	S	36.7
Bromus inermis	T	R	42.8
Calendula officinalis L.	T	S	28.4
Camellia sinensis syn. Thea sinensis	T	R	86.4
Capsicum annuus	T	S	29.7
Capsicum annuus	T	R	43.7
Capsicum frutescens (tabasco)	T	S	22.0
Carya cordiformis	T	R	27.5

Table 3
MMP-3

Chaerophyllum bulbosum	T	S	27.1
Chaerophyllum bulbosum	T	O	100.0
Chelidonium majus	T	O	54.0
Chrysanthemum parthenium	T	S	50.4
Chrysanthemum coronarium	T	S	25.8
Cichorium intybus	T	R	23.9
Citrullus lanatus	T	S	33.2
Citrullus lanatus (Garden baby)	T	S	21.4
Citrus limetoides	T	O	39.2
Citrus limon	T	O	60.4
Corchorus olitorius	T	S	28.6
Cornus canadensis L.	T	O	50.0
Cornus canadensis L.	T	R	80.6
Cosmos sulphureus	T	R	20.5
Cosmos sulphureus	T	S	27.0
Crataegus sp	T	S	43.9
Crataegus submolis	T	O	24.2
Crataegus submolis	T	R	55.1
Cucumis anguria	T	S	33.2
Cucumis sativus Fanfare	T	S	35.4
Cucurbita moschata	T	S	30.4
Cucurbita pepo	T	R	23.8
Cucurbita pepo	T	S	46.6
Cuminum cyminum	T	S	23.1
Curcuma zedoaria	T	S	20.8
Cymbopogon citratus	T	S	39.7
Dolichus lablab	T	S	25.8
Dryopteris filix-mas	T	O	54.0
Echinacea purpurea	T	S	20.4
Eriobotrya japonica	T	O	34.8
Eriobotrya japonica	T	S	42.9
Foeniculum vulgare	T	O	33.1
Fragaria x ananassa	T	S	20.3
Fragaria x ananassa	T	R	42.8
Glycine max	T	O	26.3
Glycine max	T	O	30.5
Gossypium herbaceum	T	R	22.5
Guizotia abyssinica	T	R	46.6
Hamamelis virginiana	T	S	33.1
Hamamelis virginiana	T	S	33.1

Table 3
MMP-3

Hamamelis virginiana	T	R	44.8
Hedeoma pulegiodes	T	O	46.8
Helenium hoopesii	T	R	27.9
Helianthus annuus	T	S	22.7
Helianthus strumosus	T	O	30.0
Heliotropium arborescens	T	O	53.7
Helleborus niger	T	S	40.5
Hibiscus cannabinus	T	O	34.0
Hordeum vulgare subsp. Vulgare	T	O	100.0
Humulus lupulus	T	S	24.9
Humulus lupulus	T	R	55.1
Humulus lupulus	T	R	77.6
Humulus lupulus	T	S	79.1
Humulus lupulus	T	S	100.0
Humulus lupulus	T	R	100.0
Humulus lupulus	T	S	100.0
Hypericum henryi	T	R	100.0
Hypericum perforatum	T	O	99.3
Hypomyces lactiflorum	T	O	20.5
Iris versicolor	T	R	48.5
Juniperus communis	T	R	33.8
Lactuca serriola	T	R	21.5
Laportea canadensis	T	S	37.7
Lavendula angustifolia	T	S	91.7
Lepidium sativum	T	R	24.7
Levisticum officinale	T	O	24.9
Lolium perenne	T	S	22.3
Lonicera ramosissima	T	R	42.5
Lonicera syringantha	T	R	21.1
Malus	T	O	53.1
Malus hupehensis (Pamp.) Rehd.	T	R	76.5
Malus sp.	T	R	39.8
Malus sp.	T	R	45.7
Malva moschata	T	S	22.8
Malva sylvestris	T	O	57.6
Matteucia pennsylvanica	T	R	20.1
Melissa officinalis	T	O	55.0
Mentha piperita	T	R	35.5
Mentha piperita	T	O	43.9
Mentha piperita	T	R	56.6

Table 3
MMP-3

Mentha pulegium	T	O	33.3
Mentha pulegium	T	R	56.2
Mentha spicata	T	O	43.4
Mentha spicata	T	O	58.0
Nicotiana tabacum	T	R	27.3
Nigella sativa	T	R	25.1
Ocimum Basilicum	T	R	20.2
Oenothera biennis	T	S	37.8
Origanum marjorana	T	R	45.2
Origanum vulgare	T	S	21.3
Origanum vulgare	T	O	23.3
Origanum vulgare	T	R	23.6
Origanum vulgare	T	O	37.2
Panicum miliaceum	T	S	20.6
Panicum miliaceum	T	S	30.7
Pastinaca saliva	T	R	26.1
Pastinaca sativa	T	O	100.0
Peucedanum oreoselinum	T	S	39.6
Peucedanum oreoselinum	T	R	53.4
Phaseolus vulgaris	T	S	21.8
Phaseolus vulgaris	T	O	23.6
Phaseolus vulgaris	T	O	59.8
Physalis alkekengi	T	O	55.5
Physalis pruinosa	T	S	24.8
Plantago major	T	O	77.1
Poa compressa	T	R	54.4
Polygonium chinense	T	O	36.3
Polygonium chinense	T	R	61.4
Polygonium persicaria	T	S	21.3
Populus incassata	T	S	50.7
Populus incassata	T	S	50.7
Populus X petrowskyana	T	R	66.7
Prunus cerasifera	T	O	26.1
Prunus cerasifera	T	R	64.2
Psidium guajaba	T	S	22.9
Pteridium aquilinum	T	R	43.0
Pyrus pyrifolia	T	S	28.2
Rahmus frangula	T	R	25.9
Raphanus sativus	T	R	21.4
Raphanus sativus	T	O	36.9

Table 3
MMP-3

Rhamnus frangula	T	O	43.2
Rheum rhabarbarum	T	O	28.5
Rheum X cultorum	T	R	28.2
Rianus communis	T	S	32.4
Ribes nidigrolaria	T	S	28.5
Ribes nigrum	T	R	49.9
Rosa rugosa	T	S	29.1
Rosmarinum officinalis	T	R	48.2
Rubus arcticus	T	R	59.1
Rubus ideaus	T	O	21.5
Rubus pubescens	T	O	51.8
Rubus thibetanus	T	O	33.7
Rumex patientia	T	S	34.4
Ruta graveolens	T	O	24.3
Salvia (elegens)	T	O	37.2
Salvia (elegens)	T	R	42.9
Salvia officinalis	T	R	67.3
Sambucus canadensis	T	S	30.2
Sanguisorba minor	T	R	21.0
Sanguisorba minor	T	R	29.9
Sanguisorba minor	T	R	30.8
Sanguisorba minor	T	R	44.5
Santolina	T	R	43.8
Sarratula tinctoria	T	S	37.7
Satureja montana	T	R	45.0
Satureja repandra	T	S	46.3
Scorzonera hipanica	T	R	25.7
Scutellaria lateriflora	T	S	41.2
Setaria italica	T	S	33.4
Solidago canadensis	T	S	78.5
Stachys affinis	T	S	100.0
Stachys byzantina	T	O	100.0
Stellaria media (linné) Cyrillo	T	O	51.2
Tanacetum vulgare	T	R	30.5
Tepary	T	R	31.7
Tepary	T	O	39.7
Thymus serpyllum	T	O	29.9
Thymus serpyllum	T	R	32.8
Thymus X citiodorus	T	S	22.1
Tiarella cordifolia	T	R	46.8

Table 3
MMP-3

Tragopogon portifolium	T	R	26.3
Tragopogon portifolium	T	R	29.8
Tragopogon portifolium	T	O	58.0
Triticale sp.	T	O	25.3
Tropaeolum majus	T	O	46.9
Tropaeolum majus	T	O	55.8
Tropaeolum majus	T	R	64.7
Tsuga canadensis	T	R	39.2
Vaccinium angustifolium	T	R	28.0
Vaccinium angustifolium	T	S	29.6
Vaccinium angustifolium	T	R	33.3
Vaccinium angustifolium Ait.	T	R	100.0
Vaccinium macrocarpon	T	S	25.1
Vaccinium macrocarpon	T	R	27.4
Vaccinium macrocarpon	T	O	35.4
Vaccinium macrocarpon	T	R	80.5
Vaccinium macrocarpon	T	O	90.5
Valeriana officinalis	T	O	33.0
Veratrum viride	T	S	46.8
Verbascum thapsus	T	O	33.4
Vicia faba	T	R	26.6
Vicia faba	T	O	35.8
Vigna angularia	T	S	29.3
Vigna angularia	T	O	54.0
Vigna sesquipedalis	T	O	100.0
Vigna unguiculata	T	S	49.5
Vitis sp.	T	O	99.6
Vitis sp.	T	R	50.9
Vitis sp.	T	R	75.8
Weigela coracensis	T	S	22.8
Weigela coracensis	T	S	22.8
Weigela hortensis	T	R	54.9
Zea mays	T	O	74.3

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Abelmoschus esculentus	A	S	26.8
Achillea millefolium	A	S	41.6
Aconitum napellus	A	O	47.7
Acorus calamus	A	O	83.2
Actinidia arguta	A	S	26.8
Adiantum pedatum	A	O	20.7
Agastache foeniculum	A	S	100.0
Agrimonia eupatoria	A	W	21.4
Agropyron cristatum	A	R	51.4
Agropyron repens	A	S	27.3
Agrostis alba	A	R	40.6
Agrostis Stolonifera	A	R	35.4
Alcea rosea	A	S	45.8
Alkanna tinctoria	A	S	42.5
Allium cepa	A	O	49.7
Allium grande	A	R	71.4
Allium porrum	A	S	28.0
Allium porrum	A	O	82.0
Allium sativum	A	S	23.7
Allium schoenoprasum	A	O	45.5
Allium tuberosum	A	V	20.1
Allium Tuberosum	A	O	91.5
Althaea officinalis	A	S	29.6
Amaranthus gangeticus	A	O	25.1
Amaranthus gangeticus	A	R	31.1
Amaranthus gangeticus	A	S	73.2
Amaranthus retroflexus	A	S	20.4
Ambrosia artemisiifolia	A	R	50.1
Amelanchier sanguinea	A	W	37.6
Anthemis nobilis	A	O	40.4
Anthemis nobilis	A	R	66.7
Anthemis tinctorium	A	S	30.3
Apium graveolens	A	R	71.2
Arachis hypogaea	A	V	23.5
Aralia cordata	A	S	21.2
Aralia cordata	A	S	56.3
Arctium minus	A	R	31.1

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Arctostaphylos uva-ursi	A	S	31.2
	Arctostaphylos uva-ursi	A	O	31.2
	Arctostaphylos uva-ursi	A	R	59.7
	Amoracia rusticana	A	W	25.1
	Amoracia rusticana	A	S	56.2
	Aronia melanocarpa	A	S	26.8
	Aronia melanocarpa	A	S	41.3
	Aronia melanocarpa	A	O	44.8
	Aronia melanocarpa	A	W	47.7
	Aronia melanocarpa	A	R	55.7
	Aronia melanocarpa	A	V	100.0
	Arrhenatherum elatius	A	R	40.4
	Artemisia dracunculus	A	S	51.1
	Asparagus officinalis	A	S	20.9
	Asparagus officinalis	A	S	32.6
	Aster sp	A	O	29.5
	Aster sp	A	R	80.0
	Atropa belladonna	A	S	47.4
	Beta vulgaris	A	S	25.3
	Beta vulgaris	A	R	26.6
	Beta vulgaris	A	W	34.0
	Beta vulgaris	A	O	42.0
	Beta vulgaris	A	V	44.0
	Beta vulgaris spp. Maritima	A	R	44.0
	Beta vulgaris var. condivata	A	R	35.4
	Brassica napus	A	S	24.6
	Brassica napus	A	R	53.1
	Brassica napus	A	O	100.0
	Brassica nigra	A	S	24.2
	Brassica oleracea	A	R	33.0
	Brassica oleracea	A	R	36.0
	Brassica oleracea	A	W	36.2
	Brassica oleracea	A	S	73.1
	Brassica Oleracea	A	O	100.0
	Brassica rapa	A	R	31.0
	Brassica rapa	A	W	38.6
	Brassica rapa	A	V	42.8

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Brassica rapa	A	R	48.8
Brassica rapa	A	S	68.2
Brassica rapa	A	O	89.2
Bromus inermis	A	R	51.4
Campanula rapunculoides	A	O	25.1
Canna edulis	A	S	31.1
Canna edulis	A	O	47.6
Canna edulis	A	R	68.9
Capsella bursa-pastoris	A	R	32.5
Capsicum annuum	A	O	22.0
Capsicum annuum	A	R	24.0
Capsicum annuum	A	S	55.7
Capsicum frutescens	A	S	30.3
Capsicum frutescens	A	O	34.7
Carthamus tinctorius	A	R	28.5
Carum carvi	A	S	38.6
Chelidonium majus	A	O	27.9
Chenopodium bonus-henricus	A	R	47.4
Chenopodium bonus-henricus	A	O	20.7
Chenopodium bonus-henricus	A	W	23.2
Chenopodium bonus-henricus	A	S	62.8
Chenopodium quinoa	A	V	23.1
Chenopodium quinoa	A	W	34.7
Chrysanthemum leucanthemum	A	O	20.6
Chrysanthemum leucanthemum	A	R	30.9
Chrysanthemum coronarium (Chp Suey)	A	R	26.4
Chrysanthemum coronarium	A	S	66.6
Cichorium intybus	A	S	44.7
Citrullus lanatus	A	S	62.1
Citrullus lanatus	A	O	70.6
Cornus canadensis	A	S	48.5
Cosmos sulphureus	A	S	23.4
Cosmos sulphureus	A	O	37.0
Crataegus sp	A	V	32.4
Crataegus sp	A	S	45.5
Crataegus sp	A	R	100.0

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
<i>Crataegus submollis</i>	A	S	45.5
<i>Cryptotaenia canadensis</i>	A	W	26.4
<i>Cucumis Anguria</i>	A	R	27.2
<i>Cucumis anguria</i>	A	S	36.6
<i>Cucumis anguria</i>	A	O	38.5
<i>Cucumis melo</i>	A	O	59.2
<i>Cucumis sativus</i>	A	R	39.8
<i>Cucumis sativus</i>	A	O	49.4
<i>Cucumis sativus</i>	A	S	54.4
<i>Cucurbita Maxima</i>	A	O	46.7
<i>Cucurbita moschata</i>	A	S	32.1
<i>Cucurbita pepo</i>	A	O	37.0
<i>Cucurbita pepo</i>	A	R	41.0
<i>Cucurbita pepo</i>	A	S	43.9
<i>Curcuma zedoaria</i>	A	S	67.6
<i>Curcubita maxima</i>	A	S	25.8
<i>Cymbopogon citratus</i>	A	O	26.7
<i>Dactylis glomerata</i>	A	R	27.2
<i>Datisca cannabina</i>	A	S	26.9
<i>Datisca cannabina</i>	A	O	38.0
<i>Daucus carota</i>	A	R	30.8
<i>Daucus carota</i>	A	O	31.9
<i>Dirca palustris</i>	A	O	27.3
<i>Dirca palustris</i>	A	S	34.2
<i>Dolicos Lablab</i>	A	S	22.0
<i>Dolicos Lablab</i>	A	R	25.3
<i>Dryopteris filix-mas</i>	A	S	24.9
<i>Dryopteris filix-mas</i>	A	R	40.6
<i>Eleusine coracana</i>	A	S	20.2
<i>Eleusine coracana</i>	A	R	20.9
<i>Eleusine coracana</i>	A	O	71.1
<i>Elymus junceus</i>	A	R	45.4
<i>Erigeron canadensis</i>	A	S	35.7
<i>Eruca vesicaria</i>	A	R	59.9
<i>Fagopyrum esculentum</i>	A	V	20.7
<i>Fagopyrum tartaricum</i>	A	W	30.3
<i>Fagopyrum tartaricum</i>	A	O	33.2

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Festuca rubra</i>	A	R	31.8
	<i>Foeniculum Vulgare</i>	A	W	27.4
	<i>Foeniculum vulgare</i>	A	O	50.6
	<i>Forsythia intermedia</i>	A	O	100.0
	<i>Fragaria x ananassa</i>	A	V	30.0
	<i>Fragaria x ananassa</i>	A	S	36.3
	<i>Galium odoratum</i>	A	R	26.9
	<i>Gaultheria hispidula</i>	A	R	28.4
	<i>Gaultheria hispidula</i>	A	S	40.7
	<i>Gentiana lutea</i>	A	R	34.7
	<i>Glechoma hederacea</i>	A	S	37.6
	<i>Glycine max</i>	A	R	38.1
	<i>Glycine Max</i>	A	O	56.4
	<i>Glycine max</i>	A	S	71.4
	<i>Glycyrrhiza glabra</i>	A	S	62.6
	<i>Glycyrrhiza glabra</i>	A	W	100.0
	<i>Guizotia abyssinica</i>	A	R	91.9
	<i>Hamamelis virginiana</i>	A	S	41.0
	<i>Hamamelis virginiana</i>	A	R	74.6
	<i>Hedeoma pulegioides</i>	A	O	22.0
	<i>Helianthus tuberosus</i>	A	W	21.2
	<i>Helianthus tuberosus</i>	A	W	51.5
	<i>Helichrysum angustifolium</i>	A	V	21.0
	<i>Heliotropium arborescens</i>	A	S	54.1
	<i>Helleborus niger</i>	A	S	37.8
	<i>Hordeum hexastichon</i>	A	W	38.0
	<i>Hyssopus officinalis</i>	A	O	25.1
	<i>Inula helenium</i>	A	S	29.7
	<i>Isatis tinctoria</i>	A	S	41.5
	<i>Lactuca serriola</i>	A	R	41.3
	<i>Lactuca serriola</i>	A	S	46.6
	<i>Laportea canadensis</i>	A	S	26.3
	<i>Lathyrus sativus</i>	A	O	22.2
	<i>Lathyrus sativus</i>	A	R	50.2
	<i>Lathyrus sylvestris</i>	A	V	31.3
	<i>Lathyrus sylvestris</i>	A	W	31.8
	<i>Laurus nobilis</i>	A	S	25.7

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Laurus nobilis	A	V	30.0
Lavandula latifolia	A	S	40.3
Leonurus cardiaca	A	R	27.0
Lepidium sativum	A	S	41.8
Levisticum officinale	A	S	29.0
Levisticum officinale	A	O	44.9
Linaria vulgaris miller	A	O	23.6
Linum usitatissimum	A	R	33.3
Lolium multiflorum	A	S	29.0
Lolium perenne	A	R	52.0
Lotus corniculatus	A	R	62.9
Lotus tetragonolobus	A	S	62.9
Lycopersicon esculentum	A	S	26.1
Lycopersicon esculentum	A	W	33.0
Malva moschata	A	S	31.8
Malva sylvestris	A	S	21.4
Malva verticillata	A	R	43.4
Matteucia pensylvanica	A	R	26.9
Medicago sativa	A	V	20.4
Melilotus albus	A	R	53.9
Melissa officinalis	A	S	21.4
Melissa officinalis	A	O	36.8
Melissa officinalis	A	R	53.7
Mentha piperita	A	S	57.7
Mentha pulegium	A	S	66.1
Mentha spicata	A	S	67.7
Mentha suaveolens	A	S	51.8
Momordica charantia	A	R	29.7
Momordica charantia	A	S	72.1
Nicotiana rustica	A	O	30.3
Nicotiana rustica	A	S	59.1
Nicotiana tabacum	A	S	39.0
Nicotiana tabacum	A	W	47.6
Nicotiana tabacum	A	O	100.0
Nigella sativa	A	R	59.4
Oenothera biennis	A	O	21.3
Oenothera biennis	A	O	36.7

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Origanum vulgare</i>	A	W	21.3
	<i>Origanum vulgare</i>	A	V	42.7
	<i>Oryza sativa</i>	A	W	56.5
	<i>Oxyria digyna</i>	A	W	35.1
	<i>Oxyria digyna</i>	A	V	76.4
	<i>Pastinaca sativa</i>	A	V	20.3
	<i>Pastinaca sativa</i>	A	W	23.2
	<i>Pastinaca sativa</i>	A	O	42.1
	<i>Pastinaca sativa</i>	A	R	46.9
	<i>Phalaris canariensis</i>	A	R	20.3
	<i>Phalaris canariensis</i>	A	O	80.5
	<i>Phaseolus mungo</i>	A	O	51.3
	<i>Phaseolus mungo</i>	A	S	74.1
	<i>Phaseolus vulgaris</i>	A	V	23.0
	<i>Phaseolus vulgaris</i>	A	O	51.4
	<i>Phaseolus vulgaris</i>	A	S	62.6
	<i>Phlox paniculata</i>	A	O	41.0
	<i>Physalis alkekengi</i>	A	R	31.6
	<i>Physalis ixocarpa</i>	A	S	45.2
	<i>Physalis ixocarpa</i>	A	O	65.3
	<i>Physalis Pruinosa</i>	A	O	87.3
	<i>Phytolacca americana</i>	A	S	49.6
	<i>Phytolacca americana</i>	A	O	89.8
	<i>Pimpinella anisum</i>	A	S	100.0
	<i>Plantago coronopus</i>	A	S	48.3
	<i>Plantago coronopus</i>	A	O	89.3
	<i>Plantago major</i>	A	S	21.8
	<i>Poa compressa</i>	A	R	22.4
	<i>Poa compressa</i>	A	S	49.3
	<i>Poa pratensis</i>	A	R	22.4
	<i>Polygonum pensylvanicum</i>	A	S	43.3
	<i>Polygonum persicaria</i>	A	O	21.6
	<i>Polygonum persicaria</i>	A	S	38.5
	<i>Potentilla anserina</i>	A	S	26.3
	<i>Potentilla anserina</i>	A	O	31.2
	<i>Poterium Sanquisorba</i>	A	S	29.2
	<i>Pteridium aquilinum</i>	A	S	27.3

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Raphanus sativus	A	W	22.7
Raphanus sativus	A	R	30.8
Raphanus sativus	A	R	40.2
Raphanus sativus	A	S	71.5
Raphanus sativus	A	O	100.0
Rheum rhabarbarum	A	S	21.3
Rheum rhabarbarum	A	V	67.9
Rheum rhabarbarum	A	W	72.4
Ribes nidigrolaria	A	W	32.6
Ribes nidigrolaria	A	V	64.6
Ribes nigrum	A	W	23.6
Ribes nigrum	A	V	27.2
Ribes nigrum	A	S	41.0
Ribes nigrum	A	O	65.8
Ribes Nigrum	A	W	100.0
Ribes Salivum	A	R	75.4
Ribes Sylvestre	A	V	27.7
Ribes Sylvestre	A	W	100.0
ribes uva-crispa	A	S	24.4
Ribes Uva-crispa	A	W	36.6
Ricinus communis	A	R	21.6
Rosa rugosa	A	V	30.6
Rosa rugosa	A	S	36.2
Rosa rugosa	A	W	39.3
Rosmarinus officinalis	A	W	27.2
Rosmarinus officinalis	A	R	45.7
Rubus allegheniensis	A	S	53.7
Rubus canadensis	A	V	27.0
Rubus canadensis	A	S	41.0
Rubus canadensis	A	W	41.2
Rubus canadensis	A	S	45.1
Rubus idaeus	A	V	24.3
Rubus idaeus	A	S	39.7
Rubus idaeus	A	W	62.2
Rubus idaeus	A	R	37.0
Rumex acetosella	A	V	75.8
Rumex acotosa	A	W	25.5

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Rumex crispus	A	R	73.3
Rumex crispus	A	O	60.5
Rumex patientia	A	O	49.4
Rumex patientia	A	S	65.8
Rumex Scutatus	A	W	25.5
Rumex Scutatus	A	V	61.9
Rumex Scutatus	A	O	93.8
Ruta graveolens	A	S	25.8
Ruta graveolens	A	W	27.1
Salix purpurea	A	S	22.1
Salix purpurea	A	R	33.8
Salvia elegans	A	W	23.7
Salvia officinalis	A	V	20.8
Salvia officinalis	A	S	31.4
Salvia sciarea	A	S	28.0
Satureja montana	A	W	21.7
Scutellaria lateriflora	A	S	54.1
Secale cereale	A	V	22.6
Secale cereale	A	S	22.9
Secale cereale	A	W	26.9
Sesamum indicum	A	O	21.2
Setaria italica	A	O	27.0
Sium Sisanum	A	R	32.6
Sium Sisanum	A	O	42.7
Solanum dulcamara	A	S	43.3
Solanum dulcamara	A	O	48.6
Solanum melanocerasum	A	O	21.3
Solanum melongena	A	R	20.5
Solanum melongena	A	V	35.6
Solanum melongena	A	O	49.4
Solanum melongena	A	S	65.2
Solidago sp	A	R	32.7
Spinacia oleracea	A	S	41.0
Stachys affinis	A	R	22.5
Stachys affinis	A	S	43.9
Stachys affinis	A	O	92.0
Symphytum officinale	A	S	28.0

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Tanacetum cinerarifolium	A	O	20.3
	Tanacetum cinerarifolium	A	R	69.7
	Tanacetum vulgare	A	O	20.2
	Tanacetum vulgare	A	S	84.2
	Teucrium chamaedrys	A	O	20.4
	Teucrium chamaedrys	A	R	20.4
	Thymus serpyllum	A	W	24.3
	Thymus vulgaris	A	S	42.5
	Thymus x citriodorus	A	W	27.4
	Tragopogon portifolius	A	W	21.9
	Tragopogon portifolius	A	V	26.2
	Trifolium hybridum	A	R	30.9
	Trifolium pannonicum	A	R	41.0
	Trifolium repens	A	R	51.3
	Trigonella foenum graecum	A	S	44.2
	Triticum spelta	A	S	30.0
	Triticum turgidum	A	S	31.3
	Typha latifolia	A	S	57.7
	Urtica dioica	A	O	26.5
	Urtica dioica	A	S	50.2
	Vaccinium Corymbosum	A	W	39.9
	Vaccinium Corymbosum	A	S	64.8
	Vaccinium angustifolium	A	R	44.8
	Vaccinium macrocarpon	A	S	100.0
	Veratrum viride	A	S	29.1
	Veratrum viride	A	O	31.8
	Verbascum thapsus	A	S	42.6
	Verbascum thapsus	A	O	75.2
	Viburnum trilobum	A	V	97.4
	Vicia sativa	A	R	53.3
	Vicia villosa	A	R	48.9
	Vigna unguiculata	A	R	27.0
	Vigna unguiculata	A	O	44.8
	Vigna unguiculata	A	S	55.5
	Vinca minor	A	S	35.1
	Vitis sp.	A	V	52.2
	Vitis sp.	A	S	59.6

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Vitis sp.	A	R	87.8
	Xanthium sibiricum	A	S	57.1
	Zea mays	A	V	26.1
	Zea mays	A	W	32.1
	Zea Mays	A	O	38.7
	Achillea millefolium	G	S	45.5
	Aconitum napellus	G	S	24.0
	Aconitum napellus	G	O	53.9
	Acorus calamus	G	O	87.6
	Acorus calamus	G	S	100.0
	Actinidia arguta	G	S	33.8
	Adiantum pedatum	G	R	31.6
	Adiantum pedatum	G	S	31.7
	Ageratum conyzoides	G	S	23.1
	Agropyron cristatum	G	R	64.1
	Agropyron repens	G	S	29.2
	Agropyron repens	G	O	32.6
	Agrostis Stolonifera	G	R	34.4
	Alcea rosea	G	S	22.7
	Alchemilla mollis	G	S	30.5
	Alchemilla mollis	G	W	33.2
	Allium ampeloprasum	G	O	53.4
	Allium cepa	G	S	22.5
	Allium cepa	G	O	60.7
	Allium schoenoprasum	G	S	21.1
	Allium schoenoprasum	G	O	60.4
	Allium tuberosum	G	S	38.8
	Allium tuberosum	G	O	74.4
	Althaea officianalis	G	S	54.9
	Amaranthus candathus	G	O	42.6
	Amaranthus caudatus	G	W	27.1
	Amaranthus gangeticus	G	S	56.8
	Amaranthus gangeticus	G	S	74.4
	Ambrosia artemisiifolia	G	R	49.0
	Amelanchier sanguinea	G	W	45.2
	Angelica archangelica	G	S	20.9
	Anthemis nobilis	G	R	58.9

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Apium graveolens	G	O	30.4
Apium graveolens	G	S	36.4
Apium graveolens	G	R	60.6
Arachis hypogaea	G	W	26.0
Aralia cordata	G	S	66.0
Arctium minus	G	O	26.6
Arctium minus	G	R	30.8
Arctostaphylos uva-ursi	G	S	29.3
Arctostaphylos uva-ursi	G	O	38.8
Arctostaphylos uva-ursi	G	R	80.2
Armoracia rusticana	G	S	62.7
Aronia melanocarpa	G	O	26.7
Aronia melanocarpa	G	V	100.0
Aronia melanocarpa	G	R	100.0
Aronia melanocarpa (Michx.) Ell.	G	W	39.1
Artemisia dracunculul	G	O	44.3
Artemisia dracunculul	G	S	65.4
Asclepias incarnata	G	R	20.3
Asparagus officinalis	G	O	22.3
Asparagus officinalis	G	S	26.6
Asparagus officinalis	G	W	28.7
Aster sp	G	O	34.3
Aster sp	G	R	62.6
Atropa belladonna	G	S	34.9
Beta vulgaris	G	R	28.3
Beta vulgaris	G	R	42.2
Beta vulgaris	G	O	47.0
Beta vulgaris spp. Maritima	G	O	46.7
Brassica cepticepa	G	R	26.7
Brassica cepticepa	G	S	68.3
Brassica juncea	G	O	45.0
Brassica juncea	G	S	66.1
Brassica Napus	G	S	27.5
Brassica Napus	G	R	37.6
Brassica napus	G	O	94.8
Brassica nigra	G	S	36.4
Brassica oleracea	G	R	38.7

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Brassica oleracea</i>	G	W	39.0
	<i>Brassica oleracea</i>	G	R	49.4
	<i>Brassica oleracea</i>	G	S	76.1
	<i>Brassica oleracea</i>	G	O	100.0
	<i>Brassica rapa</i>	G	R	21.1
	<i>Brassica rapa</i>	G	S	64.0
	<i>Brassica rapa</i>	G	O	100.0
	<i>Bromus inermis</i>	G	R	36.7
	<i>Campanula rapunculoides</i>	G	O	59.9
	<i>Canna edulis</i>	G	O	20.8
	<i>Canna edulis</i>	G	O	83.1
	<i>Capsicum annuum</i>	G	R	20.2
	<i>Capsicum annuum</i>	G	S	29.6
	<i>Capsicum annuum</i>	G	O	51.5
	<i>Capsicum annuum</i>	G	S	60.8
	<i>Capsicum frutescens</i>	G	S	32.8
	<i>Carthamus tinctorius</i>	G	R	29.8
	<i>Carum carvi</i>	G	S	30.4
	<i>Chelidonium majus</i>	G	O	39.9
	<i>Chenopodium bonus-henricus</i>	G	O	63.0
	<i>Chenopodium quinoa</i>	G	O	34.1
	<i>Chenopodium quinoa</i>	G	W	42.8
	<i>Chenopodium quinoa</i>	G	V	46.1
	<i>Chichorium endivia subsp endivia</i>	G	W	22.0
	<i>Chichorium endivia subsp endivia</i>	G	S	22.9
	<i>Chrysanthemum coronarium</i>	G	R	23.2
	<i>Chrysanthemum coronarium</i>	G	S	68.4
	<i>Chrysanthemum leucanthemum</i>	G	R	20.5
	<i>Cicer arietinum</i>	G	S	25.7
	<i>Cichorium intybus</i>	G	W	51.1
	<i>Cichorium intybus</i>	G	S	53.4
	<i>Citrullus lanatus</i>	G	S	36.5
	<i>Citrullus lanatus</i>	G	O	71.5
	<i>Coix Lacryma-Jobi</i>	G	O	21.0
	<i>Cornus canadensis</i>	G	S	34.8
	<i>Crataegus sp</i>	G	W	54.0
	<i>Crataegus submollis</i>	G	S	31.3

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
<i>Cryptotaenia canadensis</i>	G	W	32.1
<i>Cucumis anguria</i>	G	S	27.3
<i>Cucumis anguria</i>	G	O	32.5
<i>Cucumis sativus</i>	G	O	39.4
<i>Cucumis sativus</i>	G	S	69.4
<i>Cucurbita maxima</i>	G	O	34.1
<i>Cucurbita maxima</i>	G	S	42.6
<i>Cucurbita moschata</i>	G	S	32.0
<i>Cucurbita moschata</i>	G	O	39.2
<i>Cucurbita pepo</i>	G	S	28.8
<i>Cucurbita pepo</i>	G	O	32.6
<i>Curcuma zedoaria</i>	G	O	23.3
<i>Curcuma zedoaria</i>	G	S	57.6
<i>Cymbopogon citratus</i>	G	O	70.1
<i>Cynara scolymus</i>	G	S	20.2
<i>Cynara scolymus</i>	G	O	37.5
<i>Cynara scolymus</i>	G	R	88.7
<i>Cyperus esculentus</i>	G	S	66.7
<i>Datura metel</i>	G	S	29.2
<i>Datura stramonium</i>	G	O	27.6
<i>Daucus carota</i>	G	O	24.2
<i>Daucus carota</i>	G	R	29.3
<i>Dipsacus sativus</i>	G	S	48.7
<i>Dirca palustris</i>	G	O	29.9
<i>Dirca palustris</i>	G	S	36.4
<i>Dolichos Lablab</i>	G	S	35.8
<i>Dolichos Lablab</i>	G	R	74.5
<i>Dryopteris filix-mas</i>	G	S	27.9
<i>Dryopteris filix-mas</i>	G	R	42.6
<i>Echinochloa frumentacea</i>	G	O	68.4
<i>Eleusine coracana</i>	G	O	47.8
<i>Elymus junceus</i>	G	R	42.7
<i>Erigeron canadensis</i>	G	S	37.8
<i>Erigeron speciosus</i>	G	R	34.6
<i>Ernenatherum elatius</i>	G	R	34.4
<i>Fagopyrum tartaricum</i>	G	W	31.4
<i>Foeniculum vulgare</i>	G	W	28.0

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Foeniculum vulgare</i>	G	S	44.6
	<i>Foeniculum vulgare</i>	G	O	68.9
	<i>Foeniculum Vulgare</i>	G	R	100.0
	<i>Forsythia intermedia</i>	G	O	100.0
	<i>Forsythia x intermedia</i>	G	O	79.5
	<i>Galium odoratum</i>	G	S	32.4
	<i>Galium odoratum</i>	G	R	100.0
	<i>Gautheria hispidula</i>	G	R	48.4
	<i>Gautheria hispidula</i>	G	S	80.4
	<i>Gautheria hispidula</i>	G	O	100.0
	<i>Gautheria procumbens</i>	G	S	26.9
	<i>Gautheria procumbens</i>	G	W	54.3
	<i>Glechoma hederacea</i>	G	S	26.6
	<i>Glycine max</i>	G	R	52.5
	<i>Glycine max</i>	G	O	67.9
	<i>Glycine max</i>	G	O	75.8
	<i>Glycyrrhiza glabra</i>	G	R	21.4
	<i>Glycyrrhiza glabra</i>	G	V	21.6
	<i>Glycyrrhiza glabra</i>	G	W	100.0
	<i>Guizotia abyssinica</i>	G	R	91.4
	<i>Hamamelis virginiana</i>	G	O	39.8
	<i>Hamamelis virginiana</i>	G	R	78.8
	<i>Hamamelis virginiana</i>	G	S	96.6
	<i>Hedeoma pulegioides</i>	G	S	45.4
	<i>Helenium hoopesii</i>	G	S	22.6
	<i>Helenium hoopesii</i>	G	O	52.8
	<i>Helianthus annuus</i>	G	R	22.0
	<i>Helianthus annuus</i>	G	S	31.6
	<i>Helianthus strumosus</i>	G	R	30.5
	<i>Helianthus strumosus</i>	G	O	71.7
	<i>Helianthus tuberosus</i>	G	W	21.2
	<i>Helianthus tuberosus</i>	G	S	50.7
	<i>Helianthus tuberosus L.</i>	G	R	24.9
	<i>Heliotropium arborescens</i>	G	S	40.0
	<i>Heliotropium arborescens</i>	G	O	45.6
	<i>Helleborus niger</i>	G	S	38.0
	<i>Hordeum vulgare</i>	G	S	21.5

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Humulus lupulus</i>	G	O	35.1
	<i>Hypericum sp</i>	G	W	26.1
	<i>Hyssopus officinalis</i>	G	S	74.5
	<i>Iberis amara</i>	G	O	20.9
	<i>Iberis amara</i>	G	S	21.7
	<i>Inula helenium</i>	G	S	27.6
	<i>Ipomoea batatas</i>	G	S	37.5
	<i>Isatis tinctoria</i>	G	S	48.0
	<i>Lachica serrola</i>	G	R	53.0
	<i>Lactuca sativa</i>	G	W	24.5
	<i>Laportea canadensis</i>	G	S	36.0
	<i>Laportea canadensis</i>	G	O	81.7
	<i>Lathyrus sativus</i>	G	W	37.8
	<i>Lathyrus sylvestris</i>	G	R	40.7
	<i>Lathyrus sylvestris</i>	G	O	79.1
	<i>Laurus nobilis</i>	G	S	22.7
	<i>Lavandula angustifolia</i>	G	S	31.7
	<i>Lavandula latifolia</i>	G	O	27.2
	<i>Ledum groenlandicum</i>	G	S	61.1
	<i>Leonurus cardiaca</i>	G	O	22.6
	<i>Lepidium sativum</i>	G	S	23.3
	<i>Levisticum officinale</i>	G	S	23.1
	<i>Levisticum officinale</i>	G	W	27.5
	<i>Levisticum officinale</i>	G	O	41.3
	<i>Linum usitatissimum</i>	G	R	21.4
	<i>Lolium perenne</i>	G	R	32.7
	<i>Lotus comiculatus</i>	G	R	54.2
	<i>Malus hupehensis</i>	G	R	26.4
	<i>Malva verticillata</i>	G	R	37.9
	<i>Matricaria recutita</i>	G	O	50.3
	<i>Medicago sativa</i>	G	W	29.1
	<i>Melilotus albus</i>	G	R	52.1
	<i>Melissa officinalis</i>	G	O	22.7
	<i>Melissa officinalis</i>	G	S	35.9
	<i>Melissa officinalis</i>	G	R	38.6
	<i>Mentha piperita</i>	G	S	64.4
	<i>Mentha suaveolens</i>	G	W	22.5

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Momordica charantia	G	R	29.3
Momordica charantia	G	S	90.6
Nepeta cataria	G	R	50.5
Nicotiana rustica	G	O	35.3
Nicotiana rustica	G	S	100.0
Nicotiana tabacum	G	S	31.6
Nicotiana tabacum	G	O	100.0
Nigella sativa	G	R	24.2
Ocimum basilicum	G	S	30.6
Oenothera biennis	G	O	48.0
Oenothera biennis	G	R	76.6
Origanum vulgare	G	V	41.3
Oryza Saliva	G	O	22.1
Oxyria digyna	G	O	26.5
Oxyria digyna	G	V	70.3
Panicum miliaceum	G	O	94.4
Pastinaca sativa	G	R	29.4
Pastinaca sativa	G	S	79.2
Pennisetum alopecuroides	G	O	22.0
Petasites japonicus	G	S	29.2
Peucedanum oreaselinum	G	O	21.3
Phacelia tanacetifolia	G	R	23.5
Phalaris arundinacea	G	R	47.5
Phalaris canariensis	G	R	23.1
Phalaris canariensis	G	O	100.0
Phaseolus coccineus	G	O	37.0
Phaseolus coccineus	G	R	74.1
Phaseolus mungo	G	O	42.2
Phaseolus mungo	G	S	52.2
Phaseolus vulgaris	G	V	35.5
Phaseolus vulgaris	G	S	48.0
Phaseolus vulgaris	G	O	58.1
Phlox paniculata	G	S	32.2
Phlox paniculata	G	O	40.1
Physalis ixocarpa	G	O	20.6
Physalis pruinosa	G	O	80.0
Phytolacca americana	G	S	62.0

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Phytolacca americana	G	O	100.0
Pimpinella anisum	G	S	37.3
Pisum sativum	G	W	34.4
Pisum sativum	G	O	63.3
Plantago coronopus	G	O	42.7
Plantago coronopus	G	S	46.4
Plantago major	G	O	28.3
Plantago major	G	S	41.4
Plectranthus sp.	G	S	29.3
Poa compressa	G	R	22.1
Poa compressa	G	S	45.5
Poa pratensis	G	R	35.7
Polygonum pensylvanicum	G	S	38.3
Polygonum persicaria	G	S	31.0
Potentilla anserina	G	O	46.8
Poterium sanquisorba	G	S	24.7
Poterium sanquisorba	G	W	30.6
Prunus cerasifera	G	R	45.9
Pteridium aquilinum	G	S	22.4
Raphanus Raphanistrum	G	S	36.5
Raphanus Raphanistrum	G	O	75.0
Raphanus sativus	G	R	20.8
Raphanus sativus	G	R	27.5
Raphanus sativus	G	S	35.4
Rheum thabarbarum	G	S	27.0
Ribes Grossularia	G	W	33.7
Ribes nidigrolaria	G	S	30.7
Ribes nidigrolaria	G	V	40.5
Ribes nigrum	G	V	35.9
Ribes nigrum	G	W	58.6
Ribes Silvestris	G	V	26.9
Ribes Silvestris	G	W	100.0
Ricinus communis	G	R	21.8
Rosmarinus officinalis	G	S	24.7
Rosmarinus officinalis	G	W	30.9
Rosmarinus officinalis	G	R	60.3
Rubus ideaus	G	O	32.5

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Rubus ideaus	G	S	47.0
	Rubus occidentalis	G	S	39.4
	Rubus occidentalis	G	R	74.1
	Rumex acetosa	G	W	45.6
	Rumex acetosella	G	W	22.8
	Rumex acetosella	G	V	31.5
	Rumex crispus	G	O	25.9
	Rumex crispus	G	R	70.3
	Rumex patientia	G	O	39.8
	Rumex patientia	G	S	54.2
	Rumex scutatus	G	W	23.8
	Rumex scutatus	G	V	69.9
	Rumex scutatus	G	O	78.8
	Ruta graveolens	G	R	30.7
	Ruta graveolens	G	S	61.5
	Salvia elagens	G	W	25.4
	Salvia elegans	G	S	31.1
	Sambucus canadensis	G	W	80.6
	Sambucus ebulus	G	W	26.1
	Sambucus ebulus	G	V	34.4
	Sambucus ebulus	G	S	37.8
	Sanguisorba officinalis	G	R	100.0
	Santolina chamaecyparissus	G	R	21.7
	Santolina chamaecyparissus	G	S	25.2
	Satureja montana	G	O	21.2
	Scutellaria lateriflora	G	S	37.0
	Secale cereale	G	S	26.7
	Secale cereale	G	W	27.3
	Serratula tinctoria	G	S	36.2
	Serratula tinctoria	G	O	70.3
	Sesamum indicum	G	O	27.6
	Sesamum indicum	G	S	44.3
	Silybum marianum	G	S	34.7
	Sium sisarum	G	O	79.0
	Solanum dulcamara	G	R	25.2
	Solanum dulcamara	G	S	64.6
	solanum melongena	G	S	36.6

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
<i>solanum melongena</i>	G	O	40.1
<i>solanum melongena</i>	G	V	50.0
<i>solanum melongena</i>	G	S	74.9
<i>Solanum tuberosum</i>	G	S	39.1
<i>Solanum tuberosum</i>	G	O	39.2
<i>Solidago sp</i>	G	R	30.7
<i>Sorghum cafrorum</i>	G	O	87.9
<i>Sorghum dochna</i>	G	W	20.6
<i>Sorghum dochna</i>	G	O	20.6
<i>Sorghum dochna</i>	G	S	34.1
<i>Sorghum dochna</i>	G	O	97.0
<i>Sorghum durra</i>	G	O	30.6
<i>sorghum durra</i>	G	S	30.6
<i>sorghum durra</i>	G	O	48.0
<i>Sorghum sudanense</i>	G	S	21.7
<i>Sorghum sudanense</i>	G	O	24.6
<i>Sorghum sudanense</i>	G	V	32.1
<i>Spinacia oleracea</i>	G	S	53.2
<i>Stachys Affinis</i>	G	S	25.0
<i>Stachys Affinis</i>	G	R	27.8
<i>Stachys Affinis</i>	G	O	100.0
<i>Symphytum officinale</i>	G	W	21.7
<i>Symphytum officinale</i>	G	O	25.2
<i>Symphytum officinale</i>	G	S	34.6
<i>Tanacetum cinerariifolium</i>	G	R	52.4
<i>Tanacetum vulgare</i>	G	R	27.1
<i>Tanacetum vulgare</i>	G	S	72.7
<i>Teucrium chamaedrys</i>	G	R	24.6
<i>Teucrium chamaedrys</i>	G	O	52.8
<i>Thymus fragrantissimus</i>	G	R	100.0
<i>Thymus vulgaris</i>	G	V	24.2
<i>Thymus x citriodorus</i>	G	S	23.7
<i>Tiarella cordifolia</i>	G	S	20.8
<i>Tiarella cordifolia</i>	G	O	30.8
<i>Tragopogon portifolius</i>	G	O	22.8
<i>Trifolium hybridum</i>	G	R	24.7
<i>Trifolium pannonicum</i>	G	R	65.5

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Trifolium repens</i>	G	R	57.5
	<i>Trigonella foenumgraecum</i>	G	S	37.6
	<i>Triticum furgidum</i>	G	S	56.5
	<i>Triticum spelta</i>	G	S	40.8
	<i>Tropaeolum majus</i>	G	O	76.1
	<i>Typha latifolia</i>	G	S	43.3
	<i>Urtica dioica</i>	G	S	40.3
	<i>Vaccinium angustifolium</i>	G	S	42.4
	<i>Vaccinium corymbosum</i>	G	S	61.5
	<i>Vaccinium macrocarpon</i>	G	S	43.7
	<i>Vaccinium angustifolium</i>	G	R	23.1
	<i>Veratrum viride</i>	G	S	43.6
	<i>Verbascum thapsus</i>	G	S	37.8
	<i>Verbascum thapsus</i>	G	O	87.0
	<i>Veronica officinalis</i>	G	S	30.5
	<i>Viburnum trilobum</i>	G	S	49.4
	<i>Viburnum trilobum</i>	G	R	100.0
	<i>Viburnum trilobum</i>	G	V	100.0
	<i>Vicia faba</i>	G	R	50.5
	<i>Vicia sativa</i>	G	R	42.4
	<i>Vicia villosa</i>	G	R	89.2
	<i>Vigna angularia</i>	G	R	28.1
	<i>Vigna angularia</i>	G	S	71.5
	<i>Vigna unguiculata</i>	G	R	21.0
	<i>Vigna unguiculata</i>	G	O	38.7
	<i>Vigna unguiculata</i>	G	S	61.1
	<i>Vinca minor</i>	G	O	33.6
	<i>Vinca minor</i>	G	S	34.3
	<i>Vitis sp.</i>	G	O	29.0
	<i>Vitis sp.</i>	G	W	50.2
	<i>Vitis sp.</i>	G	S	53.3
	<i>Vitis sp.</i>	G	V	63.0
	<i>Vitis sp.</i>	G	R	86.6
	<i>Withania somnifera</i>	G	S	20.3
	<i>Xanthium sibiricum</i>	G	S	34.7
	<i>Xanthium strumarium</i>	G	S	23.2
	<i>Zea mays</i>	G	V	20.1

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Zea mays	G	S	45.9
	Zea mays	G	O	97.5
	Abelmoschus esculentus	T	S	24.8
	Abies lasiocarpa	T	W	44.7
	Achillea millefolium	T	O	24.1
	Achillea millefolium	T	S	59.2
	Aconitum napellus	T	S	40.6
	Aconitum napellus	T	O	41.6
	Aconus calamus	T	O	47.1
	Actinidia arguta	T	S	21.8
	Adiantum pedatum	T	S	26.8
	Adiantum pedatum	T	O	45.8
	Adiantum pedatum	T	R	86.0
	Agaricus bisporus	T	S	26.3
	Agaricus bisporus	T	O	29.8
	Agaricus bisporus	T	W	36.9
	Agaricus bisporus	T	W	44.0
	Agaricus bisporus	T	S	46.0
	Agastache foeniculum	T	S	70.0
	Ageratum conyzoides	T	S	31.7
	Agropyron cristatum	T	R	86.9
	Agropyron repens	T	O	49.6
	Agrostis alba	T	R	21.9
	Agrostis Stolonifera	T	R	35.8
	Alcea rosea	T	S	35.2
	Alchemilla mollis	T	S	37.9
	Allium ampeloprasum	T	O	48.0
	Allium ascalonicum	T	S	26.2
	Allium ascalonicum	T	O	77.2
	Allium cepa	T	O	92.6
	Allium grande	T	R	60.4
	Allium schoenoprasum	T	O	65.8
	Allium schoenoprasum	T	W	31.0
	Allium tuberosum	T	S	22.8
	Allium tuberosum	T	O	99.7
	Althaea officianalis	T	S	22.8
	Althaea officinalis	T	O	22.1

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Amaranthus candathus	T	W	43.9
Amaranthus gangeticus	T	O	30.3
Amaranthus gangeticus	T	S	66.0
Ambrosia artemisiifolia	T	R	58.7
Amelanchier alnifolia	T	R	70.5
Amelanchier sanguinea	T	W	37.3
Ananas comosus	T	W	23.8
Ananas comosus	T	V	95.0
Ananas comosus	T	O	99.6
angelica archangelica	T	S	30.5
angelica archangelica	T	R	38.9
Anthemis nobilis	T	O	41.4
Anthemis nobilis	T	R	72.8
Anthemis tinctorium	T	S	27.3
Anthriscus cerefolium	T	W	35.8
Apium graveolens	T	S	31.7
Apium graveolens	T	W	32.4
Apium graveolens	T	R	56.6
Aralia cordata	T	R	29.2
Aralia cordata	T	S	45.0
Arctium minus	T	R	25.8
Arctostaphylos uva-ursi	T	O	31.0
Arctostaphylos uva-ursi	T	S	35.2
Arctostaphylos uva-ursi	T	R	58.6
Amoracia rusticana	T	W	24.9
Amoracia rusticana	T	S	52.9
Aronia melanocarpa	T	W	40.0
Aronia melanocarpa	T	V	91.9
Aronia prunifolia	T	W	100.0
Arrhenatherum elatius	T	R	22.8
Artemisia draculus	T	S	74.9
Artemisia dracunculus	T	S	47.8
Asclepias incarnata	T	R	20.5
Asclnidia chinensis	T	V	43.4
Asclnidia chinensis	T	O	66.4
Asparagus officinalis	T	O	91.3
Asparagus officinalis	T	R	23.3

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Asparagus officinalis	T	S	44.7
Aster Linné	T	S	47.5
Aster sp	T	R	62.0
Atriplex hortensis	T	R	54.6
Atropa belladonna	T	R	20.1
Atropa belladonna	T	S	51.0
Avena sativa	T	R	24.8
Avena sativa	T	W	26.4
Averrhoa carambola	T	W	23.4
Ayperus esculentus	T	S	46.2
Beta vulgaris	T	R	28.2
Beta vulgaris	T	S	30.4
Beta vulgaris	T	O	56.8
Beta vulgaris spp. Maritima	T	R	23.6
Betula glandulosa	T	O	22.2
Betula glandulosa	T	V	22.2
Betula glandulosa	T	S	25.7
Betula glandulosa	T	W	32.9
Boletus edulis	T	S	36.2
Boletus edulis	T	O	90.2
Borago officinalis	T	S	27.9
Borago officinalis	T	O	76.1
Brassica cephalica	T	O	65.4
Brassica cephalica	T	S	71.5
Brassica Chinesis	T	R	27.1
Brassica juncea	T	O	51.0
Brassica juncea	T	R	66.0
Brassica juncea	T	S	74.1
Brassica Napus	T	S	22.0
Brassica Napus	T	R	34.0
Brassica Napus	T	O	100.0
Brassica nigra	T	S	26.7
Brassica nigra	T	O	27.4
Brassica nigra	T	R	82.5
Brassica oleracea	T	O	21.2
Brassica oleracea	T	S	22.1
Brassica oleracea	T	W	26.2

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Brassica oleracea</i>	T	R	27.2
	<i>Brassica oleracea</i>	T	O	31.3
	<i>Brassica oleracea</i>	T	W	46.5
	<i>Brassica oleracea</i>	T	S	71.2
	<i>Brassica oleracea</i>	T	O	93.5
	<i>Brassica rapa</i>	T	R	25.6
	<i>Brassica rapa</i>	T	R	33.9
	<i>Brassica rapa</i>	T	R	56.0
	<i>Brassica rapa</i>	T	S	69.7
	<i>Brassica rapa</i>	T	O	100.0
	<i>Bromus inermis</i>	T	R	57.3
	<i>Campanula rapunculus</i>	T	O	77.5
	<i>Canna edulis</i>	T	O	75.6
	<i>Cantharellus cibarius</i>	T	O	52.5
	<i>Capsella bursa-pastoris</i>	T	O	35.9
	<i>Capsicum annuum</i>	T	S	43.9
	<i>Capsicum annuum</i>	T	S	50.1
	<i>Capsicum frutescens</i>	T	S	28.9
	<i>Carica papaya</i>	T	W	31.1
	<i>Carthamus tinctorius</i>	T	R	37.3
	<i>Carum carvi</i>	T	S	30.1
	<i>Castanea spp.</i>	T	W	21.7
	<i>Chaerophyllum bulbosum</i>	T	S	46.0
	<i>Chamaemelum nobile</i>	T	W	36.8
	<i>Chamaemelum nobile</i>	T	W	48.4
	<i>Chelidonium majus</i>	T	O	46.6
	<i>Chenopodium bonus-henricus</i>	T	R	22.4
	<i>Chenopodium bonus-henricus</i>	T	S	57.6
	<i>Chenopodium quinoa</i>	T	V	35.5
	<i>Chenopodium quinoa</i>	T	W	54.4
	<i>Chrysanthemum leucanthemum</i>	T	R	26.5
	<i>Chrysanthemum coronarium (Chp suey)</i>	T	R	48.4
	<i>Chrysanthemum coronarium</i>	T	R	38.2
	<i>Chrysanthemum coronarium</i>	T	S	63.9
	<i>Cicer arietinum</i>	T	S	20.0
	<i>Cichorium endivia</i>	T	S	25.6

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Cichorium endivia crispa</i>	T	O	38.4
	<i>Cichorium intybus</i>	T	S	30.2
	<i>Cimicifuga racemosa</i>	T	S	33.7
	<i>Citrullus colocynthis</i>	T	S	20.4
	<i>Citrullus lanatus</i>	T	O	68.3
	<i>Citrullus lanatus</i>	T	S	31.9
	<i>Citrus limetoides</i>	T	W	20.4
	<i>Citrus limetoides</i>	T	V	37.5
	<i>Citrus limon</i>	T	V	47.7
	<i>Citrus limon</i>	T	O	72.4
	<i>Citrus paradisi</i>	T	W	23.8
	<i>Citrus paradisi</i>	T	V	33.4
	<i>Citrus reticulata</i>	T	V	20.4
	<i>Citrus reticulata</i>	T	V	20.9
	<i>Citrus reticulata</i>	T	W	26.0
	<i>Citrus reticulata</i>	T	S	40.4
	<i>Citrus reticulata</i>	T	O	50.0
	<i>Citrus reticulata</i>	T	O	79.2
	<i>Citrus sinensis</i>	T	W	25.3
	<i>Citrus sinensis</i>	T	V	59.8
	<i>Colx Lacryma-Jobi</i>	T	W	20.0
	<i>Corchorus olitorius</i>	T	S	38.9
	<i>Cornus canadensis</i>	T	S	35.6
	<i>Cosmos sulphureus</i>	T	S	51.4
	<i>Crataegus sp</i>	T	V	28.0
	<i>Crataegus sp</i>	T	R	60.9
	<i>Crataegus submollis</i>	T	O	25.5
	<i>Crithmum maritima</i>	T	S	50.6
	<i>Cryptotaenia canadensis</i>	T	O	21.2
	<i>Cryptotaenia canadensis</i>	T	W	26.0
	<i>Cryptotaenia canadensis</i>	T	V	40.0
	<i>Cucumis anguria</i>	T	S	38.7
	<i>Cucumis anguria</i>	T	O	46.6
	<i>Cucumis melo</i>	T	S	30.3
	<i>Cucumis melo</i>	T	O	46.2
	<i>Cucumis metuliferus</i>	T	W	32.0
	<i>Cucumis sativus Fanfare</i>	T	O	40.3

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Cucurbita maxima</i>	T	S	23.6
	<i>Cucurbita maxima</i>	T	S	33.1
	<i>Cucurbita maxima</i>	T	O	55.2
	<i>Cucurbita moschata</i>	T	S	20.1
	<i>Cucurbita moschata</i>	T	S	26.7
	<i>Cucurbita moschata</i>	T	O	41.7
	<i>Cucurbita pepo</i>	T	S	41.9
	<i>Cucurbita pepo</i>	T	O	82.9
	<i>Curcuma zedoaria</i>	T	S	100.0
	<i>Cydonia oblonga</i>	T	W	42.9
	<i>Cynara scolymus</i>	T	R	51.6
	<i>Cynara scolymus</i>	T	S	60.9
	<i>Dactylis Glomerata</i>	T	R	25.7
	<i>Datura stramonium</i>	T	R	21.9
	<i>Daucus carota</i>	T	R	25.9
	<i>Dioscorea batatas</i>	T	O	47.6
	<i>Dioscorea batatas</i>	T	O	83.1
	<i>Diospiros Kaki</i>	T	W	34.9
	<i>Dirca palustris</i>	T	S	27.6
	<i>Dirca palustris</i>	T	O	90.4
	<i>Dolichus lablab</i>	T	R	66.4
	<i>Dolichus lablab</i>	T	O	85.3
	<i>Dryopteris filix-mas</i>	T	S	21.9
	<i>Dryopteris filix-mas</i>	T	R	77.9
	<i>Echinacea purpurea</i>	T	S	48.6
	<i>Eleusine coracana</i>	T	O	45.2
	<i>Elymus junceus</i>	T	R	41.0
	<i>Erigeron canadensis</i>	T	S	31.4
	<i>Eriobotrya japonica</i>	T	W	28.3
	<i>Eruca vesicaria</i>	T	R	44.9
	<i>Fagopyrum esculentum</i>	T	W	76.7
	<i>Fagopyrum tartaricum</i>	T	W	42.6
	<i>Festuca rubra</i>	T	R	29.6
	<i>Festuca rubra</i>	T	S	42.9
	<i>Foeniculum vulgare</i>	T	V	22.1
	<i>Foeniculum vulgare</i>	T	S	21.6
	<i>Foeniculum vulgare</i>	T	O	84.8

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Forsythia intermedia</i>	T	O	70.8
	<i>Forsythia x intermedia</i>	T	O	60.2
	<i>Fortunella spp</i>	T	S	35.7
	<i>Fortunella spp</i>	T	W	50.7
	<i>Fortunella spp</i>	T	O	74.5
	<i>Fragaria</i>	T	W	24.8
	<i>Fragaria</i>	T	V	52.4
	<i>Fragaria</i>	T	O	100.0
	<i>Fragaria x ananassa</i>	T	S	29.3
	<i>Galium odoratum</i>	T	R	26.0
	<i>Gaultheria hispidula</i>	T	W	40.3
	<i>Ginkgo biloba</i>	T	V	27.0
	<i>Ginkgo biloba</i>	T	W	68.9
	<i>Glechoma hederacea</i>	T	R	20.4
	<i>Glechoma hederacea</i>	T	S	30.4
	<i>Glycine max</i>	T	O	26.6
	<i>Glycine max</i>	T	R	47.4
	<i>Glycine max</i>	T	S	82.0
	<i>Glycyrrhiza glabra</i>	T	S	35.4
	<i>Glycyrrhiza glabra</i>	T	O	40.5
	<i>Glycyrrhiza glabra</i>	T	W	100.0
	<i>Gossypium herbaceum</i>	T	S	36.1
	<i>Guizotia abyssinica</i>	T	R	28.9
	<i>Guizotia abyssinica</i>	T	S	40.4
	<i>Hamamelis virginiana</i>	T	O	52.4
	<i>Hamamelis virginiana</i>	T	S	67.5
	<i>Hamamelis virginiana</i>	T	R	84.1
	<i>Hedeoma pulegioides</i>	T	S	57.4
	<i>Helenium hoopesii</i>	T	O	33.7
	<i>Helenium hoopesii</i>	T	S	49.0
	<i>Helianthus annuus</i>	T	S	53.4
	<i>Helianthus strumosus</i>	T	R	20.3
	<i>Helianthus strumosus</i>	T	O	71.7
	<i>Helianthus tuberosa</i>	T	W	22.8
	<i>Helianthus tuberosus L.</i>	T	V	22.6
	<i>Helianthus tuberosus L.</i>	T	S	55.0
	<i>Helichrysum angustifolium</i>	T	S	67.0

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
<i>Heliotropium arborescens</i>	T	S	58.9
<i>Helieborus niger</i>	T	S	31.9
<i>Hibiscus cannabinus</i>	T	S	48.9
<i>Hordeum vulgare</i>	T	S	29.2
<i>Humulus lupulus</i>	T	W	22.4
<i>Humulus lupulus</i>	T	R	39.1
<i>Humulus lupulus</i>	T	O	63.1
<i>Humulus lupulus</i>	T	S	100.0
<i>Hydrastis canadensis</i>	T	S	20.2
<i>Hydrastis canadensis</i>	T	W	31.0
<i>Hyoscyamus niger</i>	T	O	56.8
<i>Hypericum henryi</i>	T	O	48.8
<i>Hypericum perforatum</i>	T	S	48.1
<i>Hypericum perforatum</i>	T	O	63.7
<i>Hypomyces lactiflorum</i>	T	S	44.8
<i>Hypomyces lactiflorum</i>	T	O	60.9
<i>Hysops officinalis</i>	T	W	22.9
<i>Inula helenium</i>	T	S	24.6
<i>Juniperus communis</i>	T	S	33.0
<i>Juniperus communis</i>	T	O	38.2
<i>Lactuca sativa</i>	T	S	44.5
<i>Lactuca sativa</i>	T	R	50.7
<i>Laportea canadensis</i>	T	S	30.2
<i>Lathyrus Sativus</i>	T	O	20.4
<i>Lathyrus Sativus</i>	T	R	52.5
<i>Lathyrus sylvestris</i>	T	W	27.7
<i>Lathyrus sylvestris</i>	T	O	36.8
<i>Laurus nobilis</i>	T	S	52.0
<i>Lavendula angustifolia</i>	T	W	26.4
<i>Lavendula angustifolia</i>	T	S	53.2
<i>Lavendula latifolia</i>	T	S	51.3
<i>Ledum groenlandicum</i>	T	S	44.4
<i>Lentinus edodes</i>	T	W	42.1
<i>Lentinus edodes</i>	T	O	100.0
<i>Lepidium sativum</i>	T	S	44.2
<i>Levisticum officinale</i>	T	S	20.8
<i>Levisticum officinale</i>	T	O	39.4

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Linum usitatissimum</i>	T	R	42.3
	<i>Litchi chinensis</i>	T	W	25.7
	<i>Lolium multiflorum</i>	T	S	20.6
	<i>Lolium perenne</i>	T	R	28.7
	<i>Lonicera ramosissima</i>	T	S	26.3
	<i>Lonicera ramosissima</i>	T	O	40.4
	<i>Lonicera ramosissima</i>	T	W	53.2
	<i>Lonicera syringantha</i>	T	W	95.8
	<i>Lotus corniculatus</i>	T	R	100.0
	<i>Lotus tetragonolobus</i>	T	S	65.4
	<i>Lunaria annua</i>	T	O	55.7
	<i>Lunaria annua</i>	T	S	67.3
	<i>Lycopersicon esculentum</i>	T	R	37.6
	<i>Malus</i>	T	W	31.8
	<i>Malus</i>	T	V	44.4
	<i>Malus hupehensis</i> (Pamp.) Rehd.	T	R	26.3
	<i>Malus hupehensis</i> (Pamp.) Rehd.	T	S	67.0
	<i>Malus sp.</i>	T	R	65.3
	<i>Malva moschata</i>	T	S	41.1
	<i>Malva sylvestris</i>	T	S	36.4
	<i>Malva sylvestris</i>	T	O	47.4
	<i>Malva verticillata</i>	T	R	42.7
	<i>Mangifera indica</i>	T	O	30.5
	<i>Manihot esculenta</i> syn. <i>M. utilissima</i>	T	W	38.3
	<i>Manihot esculenta</i> syn. <i>M. utilissima</i>	T	S	50.4
	<i>Manihot esculenta</i> syn. <i>M. utilissima</i>	T	O	86.5
	<i>Meilolotus alba</i>	T	R	30.4
	<i>Meilolotus officinalis</i>	T	R	68.1
	<i>Meilolotus officinalis</i>	T	S	33.7
	<i>Meilolotus officinalis</i>	T	O	34.7
	<i>mentha arvensis</i>	T	R	53.7
	<i>Mentha suaveolens</i>	T	S	26.8
	<i>Menyanthes trifoliata</i>	T	S	32.8
	<i>Miscanthus sinensis</i> Andress	T	R	22.7
	<i>Momordica charantia</i>	T	S	55.5
	<i>Monarda didyma</i>	T	S	26.8
	<i>Monarda fistulosa</i>	T	S	21.5

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Montia perfoliata	T	R	26.6
	Musa paradisiaca	T	W	29.0
	nasturtium officinale	T	S	35.4
	Nepeta cataria	T	W	26.5
	Nepeta cataria	T	O	27.5
	Nepeta cataria	T	S	41.9
	Nephelium longana ou Euphoria longana	T	W	43.4
	Nicotiana rustica	T	O	26.0
	Nicotiana rustica	T	S	32.7
	Nicotiana tabacum	T	S	25.1
	Nicotiana tabacum	T	O	77.7
	Nigella sativa	T	R	59.3
	Nigella sativa	T	R	100.0
	Ocimum Basilicum	T	W	20.2
	Ocimum Basilicum	T	V	20.2
	Ocimum Basilicum	T	S	32.8
	Oenothera biennis linné	T	R	100.0
	Onobrychis viciifolia	T	R	45.0
	Optunia sp.	T	W	33.4
	Origanum marjonara	T	O	20.5
	Origanum vulgare	T	O	20.8
	Origanum vulgare	T	W	21.6
	Oryza sativa	T	W	42.4
	oxyria digyna	T	O	57.0
	oxyria digyna	T	V	77.9
	Panax quinquefolius L.	T	O	23.5
	Panicum miliaceum	T	W	36.5
	Passiflora spp	T	S	35.8
	Passiflora spp	T	V	38.3
	Passiflora spp	T	W	46.2
	Passiflora spp	T	O	100.0
	Pastinaca sativa	T	O	21.7
	Pastinaca sativa	T	R	38.6
	Pastinaca sativa	T	S	39.2
	Persea americana	T	V	32.5
	Persea americana	T	O	38.6

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Petasites Japonicus	T	S	26.2
	Phalaris canariensis	T	O	80.0
	Phaseolus coccineus	T	S	44.4
	Phaseolus coccineus	T	R	79.1
	Phaseolus mungo	T	S	27.0
	Phaseolus mungo	T	O	37.9
	Phaseolus vulgaris	T	R	20.1
	Phaseolus vulgaris	T	S	51.9
	Phaseolus vulgaris	T	O	61.7
	Phlox paniculata	T	S	22.9
	Phlox paniculata	T	O	44.5
	Phoenix dactylifera	T	O	29.6
	Physalis alkekengi	T	R	32.9
	Physalis ixocarpa	T	R	26.6
	Physalis ixocarpa	T	O	28.3
	Physalis pruinosa	T	S	27.3
	Physalis pruinosa	T	R	47.8
	Physalis pruinosa	T	O	93.1
	Physalis sp	T	W	39.1
	Physalis sp	T	V	60.8
	Phytolacca americana	T	S	41.8
	Phytolacca americana	T	O	100.0
	Phytolacca decandra syn. P. americana	T	O	85.9
	Pimpinella anisum	T	S	20.2
	Pimpinella anisum	T	O	68.4
	Pisum sativum	T	W	20.1
	Pisum sativum	T	S	25.8
	Pisum sativum	T	V	27.0
	Pisum sativum	T	O	51.8
	Plantago coronopus	T	R	21.9
	Plantago coronopus	T	O	48.6
	Plantago coronopus	T	S	66.8
	Plantago major	T	S	35.1
	Pleurotus spp	T	W	25.3
	Pleurotus spp	T	S	59.3
	Pleurotus spp	T	O	85.2

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Poa compressa</i>	T	R	26.2
	<i>Poa pratensis</i>	T	O	21.5
	<i>Poa pratensis</i>	T	R	30.0
	<i>Podophyllum peltatum</i>	T	O	33.9
	<i>Podophyllum peltatum</i>	T	S	50.2
	<i>Polygonum aviculare</i> linné	T	R	31.0
	<i>Polygonum pennsylvanicum</i>	T	S	56.6
	<i>Polygonum persicaria</i>	T	S	20.1
	<i>Populus incrasata</i>	T	W	54.9
	<i>Populus Tremula</i>	T	W	31.0
	<i>Populus X petrowskyana</i>	T	W	100.0
	<i>Potentilla anserina</i>	T	S	22.1
	<i>Potentilla anserina</i>	T	O	41.1
	<i>Prunus cerasus</i>	T	V	30.1
	<i>Prunus persica</i>	T	W	26.6
	<i>Prunus persica</i>	T	V	38.5
	<i>Prunus spp</i>	T	S	24.0
	<i>Prunus spp</i>	T	V	49.1
	<i>Psidium guajaba</i>	T	V	22.5
	<i>Psidium guajaba</i>	T	W	44.3
	<i>Psidium guajaba</i>	T	O	95.4
	<i>Psidium spp</i>	T	S	36.6
	<i>Psidium spp</i>	T	W	47.6
	<i>Psidium spp</i>	T	O	87.6
	<i>Pteridium aquilinum</i>	T	R	22.0
	<i>Punica granatum</i>	T	V	52.1
	<i>Pyrus communis</i>	T	V	39.5
	<i>Pyrus pyrifolia</i>	T	W	33.7
	<i>Raphanus raphanistrum</i>	T	O	24.5
	<i>Raphanus raphanistrum</i>	T	S	44.8
	<i>Raphanus raphanistrum</i>	T	S	46.1
	<i>Raphanus sativus</i>	T	V	25.4
	<i>Raphanus sativus</i>	T	R	32.1
	<i>Raphanus sativus</i>	T	W	38.1
	<i>Raphanus sativus</i>	T	S	63.6
	<i>Raphanus sativus</i>	T	O	93.4
	<i>Reseda luteola</i>	T	S	22.5

Table 4
MMP-9

Latin name	Stress	Extract	Inhibition (%)
Rhamnus frangula	T	S	34.2
Rhamnus frangula	T	R	39.5
Rheum officinale	T	S	100.0
Rheum palmatum	T	W	20.2
Rheum rhubarbarum	T	S	33.8
Rianus communis	T	S	20.9
Ribes nidigrolaria	T	W	44.5
Ribes nidigrolaria	T	V	53.1
Ribes nigrum	T	S	40.7
Ribes nigrum L.	T	W	50.0
Ribes nigrum L.	T	V	60.1
Ribes sativam syme	T	W	47.9
Ribes Sativum	T	R	48.2
Ribes Silvestre	T	V	26.3
Ribes Silvestre	T	W	100.0
Ribes uva-crispa	T	O	57.5
Rosa rugosa	T	S	27.8
Rosa rugosa thunb.	T	W	37.5
Rosa rugosa thunb.	T	V	45.7
Rosmarinum officinalis	T	R	44.2
Rosmarinum officinalis	T	W	65.9
Rubus canadensis	T	S	45.5
Rubus idaeus	T	W	31.4
Rubus idaeus	T	V	57.2
Rubus idaeus	T	S	28.5
Rubus idaeus	T	O	38.0
Rubus occidentalis	T	O	21.4
Rubus occidentalis	T	S	36.5
Rubus occidentalis	T	R	60.2
Rumex scutatus	T	O	84.5
Rumex crispus linné	T	O	52.5
Rumex crispus linné	T	R	100.0
Rumex patientia	T	O	23.1
Rumex patientia	T	S	65.8
Ruta graveolens	T	S	37.2
Sabal semulata syn. Serenoa repens	T	V	34.4
Sabal semulata syn. Serenoa repens	T	S	44.6

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Salix purpurea	T	R	67.8
	Salvia (elegans)	T	O	51.1
	Sambucus canadensis	T	S	44.8
	Sambucus canadensis	T	O	72.4
	Sambucus canadensis L.	T	W	67.8
	Sambucus ebulus	T	V	44.3
	Sanguisorba officinalis	T	R	100.0
	Santolina	T	R	37.9
	Satureja montana	T	S	20.0
	Satureja montana	T	O	21.3
	Satureja repandra	T	S	36.3
	Scorzonera hipanica	T	R	27.1
	Scorzonera hipanica	T	S	31.7
	Scutellaria lateriflora	T	S	44.3
	Secale cereale	T	S	24.2
	Secale cereale	T	W	31.1
	Sechium edule	T	S	37.8
	Sesamum indicum	T	S	59.2
	Setaria italica	T	W	33.0
	Silybum marianum	T	O	92.4
	Sium sisarum	T	O	32.7
	Sium sisarum	T	S	33.1
	Sium sisarum	T	O	81.3
	Solanum melogena	T	O	21.9
	solanum melogena	T	V	26.1
	Solanum melogena	T	R	34.0
	Solanum melogena	T	S	67.1
	Solanum Tuberosum	T	O	68.6
	Solidago canadensis	T	S	48.4
	Solidago sp	T	R	31.4
	Solidago virgaurea	T	S	56.2
	Sorghum caffrorum	T	O	23.3
	Sorghum dochna bicolor gr technicum	T	W	20.8
	Sorghum dochna Snowdrew	T	S	21.4
	Sorghum dochna Snowdrew	T	O	27.7
	Spinacia oleracea	T	V	25.0
	Spinacia oleracea	T	W	32.1

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Spinacia oleracea	T	S	47.6
	Spinacia oleracea	T	O	63.1
	Stachys affinis	T	R	31.7
	Stachys affinis	T	O	100.0
	Stachys byzantina	T	W	30.9
	Stipa capillata L.	T	R	20.1
	Symphytum officinale	T	S	24.1
	Tanacetum cinerarifolium	T	O	24.2
	Tanacetum cinerarifolium	T	R	84.4
	Tanacetum vulgare	T	R	25.7
	Tanacetum vulgare	T	S	75.6
	Taraxacum officinale (Red ribe)	T	S	21.1
	Tepary	T	R	56.7
	Teucrium chamaedrys L.	T	R	27.3
	Thalpsi arvense	T	S	61.4
	Thymus fragantissimus	T	R	100.0
	Thymus herba-barona	T	W	22.0
	Thymus pseudolanuginosus	T	R	36.8
	Thymus pseudolanuginosus	T	S	37.1
	Thymus serpyllum	T	S	26.0
	Thymus serpyllum	T	W	42.7
	Thymus X citriodorus	T	O	22.7
	Tiarella cordifolia	T	R	100.0
	Tragopogon portifolius	T	V	26.8
	Tragopogon portifolius	T	O	28.4
	Tragopogon portifolius	T	S	42.1
	Tragopogon sp.	T	O	20.3
	Tragopogon sp.	T	S	32.0
	Tragopogon sp.	T	W	66.3
	Trichosanthes kirilowii	T	O	66.5
	Trifolium incarnatum	T	R	47.9
	Trifolium repens	T	R	81.7
	Trigonella foenum graecum	T	S	39.6
	Triticale sp.	T	O	64.1
	Triticum aestivum	T	W	24.5
	Triticum aestivum	T	S	29.4
	Triticum furgidum	T	S	35.8

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	<i>Triticum spelta</i>	T	S	34.7
	<i>Tropaeolum majus</i>	T	O	90.3
	<i>Tropaeolum minus</i>	T	W	20.1
	<i>Tsuga canadensis</i>	T	O	21.5
	<i>Tsuga canadensis</i>	T	W	64.4
	<i>Tsuga diversifolia</i>	T	O	45.9
	<i>Tsuga diversifolia</i>	T	W	100.0
	<i>Tsuga F. macrophylla</i>	T	W	28.1
	<i>Typha latifolia</i> L.	T	S	30.6
	<i>Urtica dioica</i>	T	O	31.4
	<i>Urtica dioica</i>	T	R	36.9
	<i>Urtica dioica</i>	T	S	41.7
	<i>Vaccinium angustifolium</i>	T	V	25.2
	<i>Vaccinium angustifolium</i>	T	R	34.6
	<i>Vaccinium angustifolium</i>	T	O	59.6
	<i>Vaccinium angustifolium</i>	T	R	65.7
	<i>Vaccinium macrocarpon</i>	T	O	30.2
	<i>Vaccinium macrocarpon</i>	T	S	39.0
	<i>Vaccinium macrocarpon</i>	T	S	56.9
	<i>Vaccinium macrocarpon</i>	T	V	39.2
	<i>Vaccinium macrocarpon</i>	T	W	42.3
	<i>Veratrum viride</i>	T	O	20.5
	<i>Veratrum viride</i>	T	S	33.1
	<i>Verbascum thapsus</i>	T	S	43.1
	<i>Verbascum thapsus</i>	T	O	70.2
	<i>Veronica officinalis</i>	T	O	20.5
	<i>Viburnum trilobum</i> Marsh.	T	S	40.6
	<i>Vicia faba</i>	T	R	61.5
	<i>Vicia sativa</i>	T	R	30.1
	<i>Vigna angularis</i>	T	R	32.6
	<i>Vigna angularis</i>	T	S	64.2
	<i>Vigna unguiculata</i>	T	R	32.4
	<i>Vigna unguiculata</i>	T	O	47.4
	<i>Vigna unguiculata</i>	T	S	51.0
	<i>Vinca minor</i>	T	S	21.3
	<i>Vitis</i> sp.	T	V	28.3
	<i>Vitis</i> sp.	T	O	29.4

Table 4
MMP-9

	Latin name	Stress	Extract	Inhibition (%)
	Vitis sp.	T	S	45.4
	Vitis sp.	T	V	50.7
	Vitis sp.	T	W	61.6
	Vitis sp.	T	R	100.0
	Weigela coracensis	T	W	35.5
	Withania somnifera	T	S	35.5
	Xanthium sibiricum	T	S	38.6
	Xanthium strumarium	T	S	33.5
	Zea mays	T	S	37.1
	Zea mays	T	O	65.5
	Zingiber officinale	T	S	20.1
	Zingiber officinale	T	W	58.9
	Zingiber officinale	T	O	75.9

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Achillea millefolium	A	O	61.9
Achillea tomentosa	A	O	60.8
Aconitum	A	O	38.6
Aconitum napellus	A	O	61.1
Alchemilla mollis	A	R	26.7
Allium	A	R	43.0
Allium cepa gr. Cepa	A	O	49.9
Allium cepa gr. Cepa	A	O	70.1
Allium cepa gr. Cepa	A	R	45.8
Allium sativum	A	O	25.6
Allium Tuberoseum	A	O	91.5
Allium Tuberoseum	A	O	75.0
Allium victorialis	A	O	31.1
Amaranthus gangeticus	A	O	26.1
Amaranthus gangeticus	A	O	29.0
Amelanchier canadensis	A	R	28.7
Anthemis tinctoria	A	O	26.8
Anthemis tinctoria	A	R	32.4
Anthoxanthum odoratum	A	O	24.9
Apium graveolens	A	O	31.1
Apium graveolens	A	O	20.6
Aralia cordata	A	R	52.3
Arctium lappa	A	O	33.7
Arctium lappa	A	R	33.0
Aronia melanocarpa (Michx.) Ell.	A	R	41.2
Aronia melanocarpa (Michx.) Ell.	A	O	21.6
Asarum europaeum	A	O	24.9
Athaea officinalis	A	O	57.7
Athyrium asperum	A	O	27.3
Atropa belladonna	A	O	37.7
Begonia convolvulacea	A	O	26.0
Begonia eminii	A	O	34.2
Begonia glabra	A	O	38.9
Begonia Hannii	A	O	52.9
Begonia polygonoides	A	O	67.3
Berberis vulgaris	A	O	54.6
Beta vulgaris	A	R	39.9
Beta vulgaris	A	R	30.4
Beta vulgaris	A	O	61.9

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Beta vulgaris	A	O	43.0
Beta vulgaris	A	R	91.0
Beta vulgaris	A	O	46.7
Beta vulgaris	A	R	65.3
Beta vulgaris	A	R	33.4
Beta vulgaris	A	O	54.3
Beta vulgaris	A	O	38.2
Beta vulgaris	A	R	55.9
Beta vulgaris	A	R	28.5
Beta vulgaris	A	O	40.1
Beta vulgaris spp. Maritima	A	O	33.4
Brassica juncea	A	O	21.3
Brassica Oleracea	A	O	27.5
Brassica Oleracea	A	O	48.2
Brassica rapa	A	O	20.8
Calendula officinalis	A	O	35.6
Camellia sinensis syn. Thea sinensis	A	R	24.4
Cana edulis	A	R	100.0
Capsicum annuum	A	O	25.0
Capsicum frutescens	A	O	29.6
Chrysanthemum balsamita	A	O	89.3
Chrysanthemum balsamina	A	O	55.0
Chrysanthemum coronarium (Chp Suey)	A	O	30.1
Chrysanthemum coronarium (Chp Suey)	A	O	36.4
Cichorium intybus	A	R	100.0
Citrullus lanatus	A	O	24.4
Convallaria maialis	A	O	57.0
Coriandrum sativum	A	R	20.8
Cryptotaenia canadensis	A	O	20.4
Cucumis Anguria	A	O	26.8
Cucumis sativus	A	R	45.6
Curbubila pepo	A	O	30.8
Daucus carota	A	R	68.8
Daucus carota	A	O	20.3
Daucus carota	A	R	72.5
Daucus carota	A	O	22.6
Daucus carota	A	O	25.6
Daucus carota	A	R	65.9
Daucus carota	A	R	77.3

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Daucus carota	A	R	41.6
Dirca palustris	A	R	100.0
Eruca vesicaria	A	O	41.4
Filipendula rubra	A	R	65.0
Forsythia intermedia	A	R	100.0
Forsythia x intermedia	A	R	100.0
Geum rivale	A	O	26.4
Glycyrrhiza glabra	A	R	86.8
Heliotropium arborescens	A	O	29.5
Humulus Lupulus	A	O	65.4
Humulus Lupulus	A	R	100.0
Hylotelephium	A	R	23.7
Hypericum henryi	A	R	44.4
Iberis sempervirens	A	O	84.6
Jeffersonia diphylla	A	O	35.4
Ligularia dentata	A	O	30.3
Lonicera ramosissima	A	R	48.7
Miscanthus sacchariflorus	A	O	50.9
Nicotiana tabacum	A	O	40.0
Nicotiana tabacum	A	O	56.8
Nicotiana tabacum	A	O	55.2
Nigella sativa	A	O	40.3
Origanum majorana	A	O	49.7
Origanum vulgare	A	O	67.0
Origanum vulgare	A	O	39.9
Panax quinquefolius L.	A	O	24.0
Pastinaca sativa	A	R	33.5
Petroselinum crispum	A	O	70.2
Peucedanum cervaria	A	O	21.5
Phaseolus Vulgaris	A	O	67.9
Philadelphus coronarius	A	O	24.0
Physostegia virginiana	A	O	56.9
Phytolacca americana	A	O	100.0
Plantago major	A	O	31.2
Plectranthus fruticosus	A	O	32.1
Polygonum pennsylvanicum	A	R	70.1
Pulmonaria saccharata	A	O	31.1
Raphanus sativus	A	O	21.5
Raphanus sativus	A	O	50.5

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Raphanus sativus	A	O	58.9
Ribes nigrum L.	A	O	53.1
Rubus Allegheniensis	A	O	56.7
Rubus ideaus	A	R	89.0
Rumex crispus linné	A	R	65.2
Salvia elegans	A	O	32.6
Salvia nemorosa	A	O	26.2
Salvia officianalis	A	O	26.3
Salvia sclarea	A	R	51.6
Salvia sclarea	A	O	21.5
Saponaria officinalis	A	O	68.5
Satureja montana	A	O	47.6
Scorzonera hispanica	A	O	29.9
Sesamum indicum	A	O	84.8
Solanum dulcamara	A	O	51.3
Solidago canadensis	A	O	95.3
Solidago hybrida	A	O	94.5
Solidago hybrida	A	O	99.5
Solidago sp ?	A	O	60.9
Stellaria graminea linné	A	O	40.2
Tamarindus indica	A	O	59.2
Taraxacum officinale	A	O	88.6
Thalictrum aquilegifolium	A	O	65.2
Thalictrum Aquilegifolium	A	O	44.5
Thuja occidentalis	A	O	50.6
Thymus praecox subsp arcticus	A	O	23.9
Tiarella	A	R	34.4
Vaccinium augustifolium	A	R	67.2
Vaccinium macrocarpon	A	R	37.1
Vitis sp.	A	R	93.7
Xanthium strumarium	A	O	83.2
Yucca filamentosa	A	O	34.5
Zea mays	A	O	29.7
Zea mays	A	O	93.2
Achillea tomentosa	G	O	41.0
Adiantum tenerum	G	R	30.2
Alcea rosea	G	O	37.7
Alchemilla mollis	G	R	32.8
Allium schoenoprasum	G	O	49.3

Table 5
Cath B

Latin Name	Stress	Extract	Inhibition (%)
Allium tuberosum	G	O	79.1
Allium tuberosum	G	O	77.4
Allium victorialis	G	O	45.5
Althaea officinalis	G	O	67.2
amaranthus gangeticus	G	O	23.5
Anaphalis margaritacea	G	R	34.7
Angelica dahurica	G	R	27.9
Anthemis nobilis	G	O	42.3
Apium graveolens	G	O	25.7
Apium graveolens	G	O	27.4
Arctostaphylos uva-ursi	G	R	94.5
Aronia melanocarpa	G	R	74.5
Aronia melanocarpa	G	O	21.3
Aronia melanocarpa (Michx.) Ell.	G	R	79.9
Aronia melanocarpa (Michx.) Ell.	G	R	28.3
Asarum europaeum	G	O	55.4
Atropa belladonna	G	O	58.9
Begonia emini	G	O	24.7
Begonia glabra	G	O	42.9
Begonia manii	G	O	32.1
Begonia polygonoides	G	O	38.2
Berberis vulgaris	G	O	42.3
Beta vulgaris	G	R	75.3
Beta vulgaris	G	O	28.7
Beta vulgaris	G	O	21.7
Beta vulgaris	G	R	40.0
Beta vulgaris spp. Maritima	G	O	31.4
Betula glandulosa	G	R	38.5
Calendula officinalis	G	O	36.2
Capsicum annuus	G	O	49.9
Chrysanthemum balsamita	G	O	100.0
Chrysanthemum balsamina	G	O	33.1
Cynara scolymus	G	O	51.9
Daucus carota	G	O	81.3
Daucus carota	G	O	27.2
Dirca palustris	G	R	100.0
Echinacea purpurea	G	O	22.9
Equisetum hyemale	G	O	100.0
Erigeron canadensis	G	O	73.3

Table 5
Cath B

Latin name	Stress	Extraction	Inhibition (%)
Erigeron speciosus (Lindl.) D.C.	G	O	22.9
Eruca vesicaria	G	O	29.2
Erysimum perofskianum Fish. S.	G	O	89.8
Fenouil bronze	G	R	23.7
Filipendula rubra	G	R	93.2
Filipendula rubra	G	R	100.0
Filipendula ulmaria	G	O	20.5
Filipendula vulgaris	G	O	26.2
Forsythia intermedia	G	R	100.0
Forsythia x intermedia	G	R	100.0
Galium odoratum	G	O	21.0
Gaultheria hispidula (L.) Muhl	G	R	39.3
Gaultheria procumbens	G	R	43.4
Geum rivale	G	O	21.7
Glycine max	G	O	64.2
Glycyrrhiza glabra	G	R	53.4
Hamamelis virginiana	G	R	88.4
Heliotropium arborescens	G	O	23.0
Humulus lupulus	G	R	100.0
Humulus lupulus	G	O	90.2
Hydrastis canadensis	G	O	30.9
Hydotelephium	G	R	43.8
Hypericum henryi	G	R	50.3
Iberis sempervirens	G	O	87.7
Lathyrus sativus	G	R	25.9
Ligularia dentata	G	O	31.5
Lunaria annua	G	O	59.7
Lythrum salicaria	G	R	33.1
Melissa officinalis	G	O	27.6
Miscanthus sacchariflorus	G	O	30.7
Nicotiana rustica	G	O	54.8
Nicotiana tabacum	G	O	36.2
Nigella sativa	G	O	40.3
Origan	G	O	98.8
Origanum majorana	G	O	48.9
Panax quinquefolius L.	G	O	21.1
Panicum miliaceum	G	R	100.0
Passiflora caerulea	G	O	66.2
Petroselinum crispum	G	O	65.0

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Phaseolus vulgaris	G	R	40.3
Physostegia virginiana	G	O	74.0
Phytolacca americana	G	O	100.0
Plantago major	G	O	60.9
Plectranthus fruticosus	G	O	29.2
Polygonum aviculare linné	G	R	45.6
Pongamia pinnata	G	O	41.7
Pulmonaria officinalis	G	O	36.9
Pulmonaria saccharata	G	O	24.7
Raphanus sativus	G	O	38.9
Raphanus sativus	G	O	86.4
Rhus aromatica	G	O	49.1
Ribes nigrum L.	G	O	20.6
Rubus idaeus	G	R	56.9
Rubus occidentalis	G	R	61.3
Saponaria officinalis	G	O	48.3
Sarricette vivace	G	O	44.6
Satureja repandra	G	O	72.3
Sesamum indicum	G	O	46.8
Sidalcea	G	O	55.2
Silene vulgaris	G	O	35.5
Solanum dulcamara	G	O	56.9
Solidago canadensis	G	O	99.8
Solidago canadensis	G	O	100.0
Solidago sp ?	G	O	71.8
Sorghum caffrorum	G	O	34.5
Tamarindus indica	G	O	65.4
Taraxacum officinale	G	O	82.7
taraxacum officinale	G	O	42.7
Tetradenia riparia	G	O	32.5
Thalictrum aquilegifolium	G	O	62.1
Thuja occidentalis	G	O	57.7
Thymus vulgaris "Argenteus"	G	O	40.7
Tiarella	G	R	39.0
Tropaeolum majus	G	O	36.6
Tussilago farfara	G	O	26.8
Vaccinium angustifolium	G	R	26.4
Vaccinium angustifolium	G	R	89.1
Vaccinium macrocarpon	G	R	33.9

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Vitis sp.	G	R	100.0
Vitis sp.	G	R	90.9
Vitis sp.	G	O	37.1
Achillea millefolium	T	O	44.1
Aconitum napellus	T	O	27.4
Aesculus hippocastanum	T	R	84.2
Aesculus hippocastanum	T	O	47.3
Alcea rosea "Nigra"	T	O	24.3
Alchemilla mollis	T	R	24.9
Allium ascalonicum	T	O	31.1
Allium cepa gr. Cepa	T	O	39.4
Allium cepa gr. Cepa	T	R	23.2
Allium cepa gr. Cepa	T	O	45.5
Allium fistulosum	T	O	21.9
Allium grande	T	O	39.5
Allium tuberosum	T	O	26.6
Allium tuberosum	T	O	33.1
Allium tuberosum	T	O	72.3
Allium tuberosum	T	R	22.6
Allium victorialis	T	O	42.3
Alpinia officinarum	T	O	57.4
Alpinia officinarum	T	R	88.9
Althaea officinalis	T	O	51.5
Althaea officinalis	T	O	25.2
Amelanchier canadensis	T	O	20.8
Amelanchier canadensis	T	R	42.1
Amsonia tabernaemontana	T	O	30.2
Ananas comosus	T	R	36.2
Anaphalis margaritacea	T	R	33.9
Angelica dahurica	T	R	40.7
Angelica sinensis syn. A. polymorpha	T	O	91.0
Anthriscus cerefolium	T	R	23.3
Anthriscus cerefolium	T	O	21.7
Aralia cordata	T	R	44.1
Aronia melanocarpa	T	R	33.1
Aronia melanocarpa	T	R	100.0
Aronia melanocarpa (Michx.) Ell.	T	R	35.0
Aronia prunifolia	T	R	50.4
Artemisia draculus	T	O	42.5

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Asarum europaeum	T	O	39.4
Asclepias incarnata L.	T	O	48.7
Asclepias tuberosa	T	O	21.5
Asclitidlia chinensis	T	O	24.9
Atriplex hortensis	T	O	22.4
Atropa belladonna	T	O	94.1
Aubépine, hawthorne	T	R	72.7
Begonia convolvulacea	T	O	32.1
Begonia emini	T	O	40.4
Begonia glabra	T	O	84.3
Begonia manii	T	O	64.2
Berberus vulgaris	T	O	35.4
Beta vulgaris	T	O	34.1
Beta vulgaris	T	R	86.7
Beta vulgaris	T	O	23.8
Beta vulgaris	T	R	79.4
Beta vulgaris	T	O	34.2
Beta vulgaris	T	R	20.8
Beta vulgaris	T	R	37.0
Beta vulgaris spp. Maritima	T	R	83.6
Betula glandulosa	T	R	62.5
Borago officinalis	T	O	23.5
Brassica Napus	T	O	27.6
Brassica oleracea	T	O	21.8
Brassica oleracea	T	O	22.3
Butomus umbellatus	T	O	20.8
Canna edulis	T	R	100.0
cannelle	T	R	99.5
Carica papaya	T	R	100.0
Chrysanthemum balsamita	T	O	89.3
Chrysanthemum parthenium	T	R	44.6
chrysanthemum coronarium (Chp Suey)	T	O	28.7
chrysanthemum coronarium (Chp Suey)	T	O	59.2
Citrus paradisi	T	R	100.0
Citrus sinensis	T	R	100.0
Cocos nucifera	T	R	100.0
Cocos nucifera	T	O	71.9
Convallaria majalis	T	O	67.1
Corchorus olitorius	T	R	26.0

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Crataegus sanguinea	T	O	33.1
Cryptotaenia canadensis	T	R	23.1
Cucumis anguria	T	O	26.4
Cucumis sativus (Fanfare)	T	O	25.7
Cydonia oblonga	T	R	23.6
Datura stramonium	T	O	61.4
Daucus carota	T	R	21.1
Diospiros Kaki	T	R	100.0
Echinacea purpurea	T	O	27.8
Eriobotrya japonica	T	R	25.2
Eruca vesicaria	T	O	34.5
Erysimum perofskianum Fish. S.	T	O	91.0
Fragaria x ananassa	T	R	37.5
Fucus vesiculosus	T	R	87.1
Fumaria officinalis	T	O	44.4
Gaultheria procumbens	T	R	74.8
Gentiana macrophylla	T	O	44.5
Glyceria maxima	T	O	37.6
Glycine max Envy	T	O	40.3
Glycyrrhiza glabra	T	R	37.7
Hamamelis virginiana	T	R	78.3
Helichrysum angustifolium	T	R	21.8
Heliotropium arborescens	T	O	26.8
Humulus lupulus	T	R	84.7
Humulus lupulus	T	O	39.2
Humulus lupulus	T	O	100.0
Humulus lupulus	T	R	100.0
Hydrastis canadensis	T	I	42.7
Hypericum henryi	T	R	51.8
Hypericum perforatum	T	O	52.3
Hypomyces lactiflorum	T	O	30.1
Iberis sempervirens	T	O	90.8
Jeffersonia diphylla	T	O	43.0
Juglans nigra	T	R	66.7
Kochia scoparia (L.) Schrad.	T	O	38.4
Krameria Triandra	T	R	63.6
Lentinus edodes	T	R	100.0
Lentinus edodes	T	R	26.2
Ligularia dentata	T	O	34.9

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Ligustrum vulgare	T	O	29.5
Lunaria annua	T	O	72.3
Lunaria annua	T	R	51.1
Lupinus polyphyllus lindl.	T	O	47.4
Lychnis chalcidonica	T	O	34.4
Lythrum salicaria	T	R	53.8
Mangifera indica	T	R	100.0
Mangifera indica	T	O	29.3
Nigella sativa	T	O	26.1
Nil	T	O	73.6
Nil	T	R	25.4
Nil	T	R	24.6
Nil	T	R	49.8
Nil	T	O	43.6
Nil	T	R	28.4
Optunia sp.	T	R	100.0
Panax quinquefolius L.	T	O	27.4
Passiflora caerulea	T	O	39.8
Pastinaca sativa	T	O	20.5
Peroselinum crispum	T	O	60.9
Phaseolus vulgaris	T	O	37.5
Physostegia virginiana	T	O	64.2
Phytolacca americana	T	O	51.9
Phytolacca americana	T	O	100.0
Plectranthus fruticosus	T	O	23.4
Polygonatum odoratum	T	O	100.0
Polygonium chinense	T	R	33.6
Pontederia cordata	T	O	26.2
Portulacca oleracea	T	O	20.7
Primula veris	T	O	58.2
Prunus persica	T	R	100.0
Prunus persica (hybride de la pêche)	T	R	100.0
Pulmonaria officinalis	T	O	22.8
Punica granatum	T	R	100.0
Pyrus pyrifolia	T	R	22.4
Radix Paeonia rubra	T	O	39.8
Rahmnus frangula	T	R	25.3
Raphanus sativus	T	O	45.8
Rhus trilobata	T	O	20.2

Table 5
Cath B

Latin name	Stress	Extraction	Inhibition (%)
Ribes uva-crispa	T	R	34.2
Rosa Rugosa "Alba"	T	O	45.4
Rubus idaeus	T	R	31.2
Rubus idaeus L.	T	O	42.7
Rubus idaeus	T	R	74.2
Rubus occidentalis	T	R	68.1
Rumex crispus linné	T	R	37.9
Salvia nemorosa	T	O	38.2
Sambucus canadensis	T	O	27.5
Sambucus nigra	T	O	30.8
Sanguisorba minor	T	R	78.3
Saponaria officinalis	T	O	68.7
Saponaria officinalis L.	T	O	44.2
Satureja hortensis	T	O	62.1
Secchium edule	T	O	34.4
Sesamum indicum	T	O	78.6
Sidalcea	T	O	42.9
Silene vulgaris	T	O	51.3
Solidago hybrida	T	O	92.8
Solidago Hybrida	T	O	100.0
Solidago Hybrida	T	R	100.0
Solidago sp ?	T	O	39.6
Tamarindus indica	T	O	64.2
Tanacetum balsamita	T	O	100.0
Tanacetum vulgare	T	O	23.3
Taraxacum officinale	T	O	90.9
Taraxacum officinale (Red ribe)	T	O	34.5
Thuja occidentalis	T	O	37.6
Thymus serpyllum	T	O	20.6
Tiarella	T	R	35.6
Tragopogon sp.	T	R	21.1
Trigonella foenum graecum	T	R	97.3
Tropaeolum majus	T	O	58.8
Tropaeolum majus	T	R	28.6
Tropaeolum majus	T	O	36.7
Tsuga diversifolia	T	R	64.0
Vaccinium angustifolium	T	R	72.2
Vaccinium angustifolium	T	R	50.7
Vaccinium macrocarpon	T	R	52.6

Table 5
Cath B

Latin name	Stress	Extract	Inhibition (%)
Vitis sp.	T	O	35.1
Vitis sp.	T	R	98.9
Vitis sp.	T	R	32.6
Weigela coracensis	T	R	24.6
Zea mays	T	R	100.0
Zea mays	T	R	48.1

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Agastache foeniculum	A	O	91.6
Agropyron cristatum	A	O	24.5
Agropyron repens	A	O	75.2
Agrostis Stofonifera	A	O	94.7
Alchemilla mollis	A	O	39.0
Allium sativum	A	R	100.0
Allium schoenoprasum	A	R	40.0
Althaea officinalis	A	O	96.5
Amaranthus gangeticus	A	R	67.4
Amaranthus gangeticus	A	O	74.3
Amaranthus retroflexus	A	O	100.0
Ambrosia artemisiifolia	A	O	75.4
Anethum graveolens	A	O	48.7
Angelica archangelica	A	O	27.6
Anthemis nobilis	A	O	56.2
Anthemis tinctoria	A	S	42.3
Aralia cordata	A	R	100.0
Aralia nudicaulis	A	R	44.9
Arctium minus	A	O	93.2
Arctium minus	A	O	100.0
Aronia melanocarpa	A	O	22.8
Artemisia abrotanum	A	O	31.3
Artemisia abrotanum	A	O	43.6
Artemisia absinthium	A	O	58.3
Artemisia Absinthium	A	O	71.4
Artemisia dracunculus	A	O	70.5
Artemisia Ludoviciana	A	O	74.4
Artemisia Ludoviciana	A	O	100.0
Asparagus officinalis	A	O	61.9
Aster sp	A	O	100.0
Aster sp	A	O	100.0
Atropa belladonna	A	O	100.0
Beckmannia eruciformis	A	R	22.1
Beckmannia eruciformis	A	O	48.3
Beta vulgaris	A	R	21.2
Beta vulgaris	A	R	100.0
Beta vulgaris spp. Maritima	A	O	30.8
Beta vulgaris	A	O	100.0
Brassica napus	A	R	63.6

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Brassica oleracea	A	R	33.3
Brassica rapa	A	R	23.8
Brassica rapa	A	O	26.1
Bromus inermis	A	O	59.6
Calamintha nepeta	A	R	24.0
Campanula rapunculus	A	O	41.6
Canna edulis	A	O	100.0
Capsella bursa-pastoris	A	O	36.7
Capsicum annuum	A	R	25.8
Capsicum annuum	A	R	28.2
Capsicum annuum	A	O	64.7
Capsicum annuum	A	R	76.9
Capsicum futescens	A	O	44.1
Carthamus tinctorius	A	O	42.9
Carum carvi	A	R	28.6
Chaerophyllum bulbosum	A	O	100.0
Chelidonium majus	A	R	100.0
chenopodium bonus-henricus	A	O	54.3
Chenopodium quinoa	A	R	22.2
Chrysanthemum coronarium	A	O	96.8
Cichorium endivia susp. Endivia	A	R	36.0
Cichorium endivia susp. Endivia	A	O	78.4
Cichorium intybus	A	O	100.0
Citrullus lanatus	A	O	22.7
Citrullus lanatus	A	R	26.7
Citrullus lanatus	A	R	35.9
Citrullus lanatus	A	O	76.5
Coix Lacryma-Jobi	A	O	20.9
Coix Lacryma-Jobi	A	O	93.2
Cornus canadensis	A	O	30.9
Cuburbita pepo	A	O	21.9
Cucumis melo	A	O	44.1
Cucumis sativus	A	O	21.3
Cucumis sativus	A	R	33.3
Cucurbita Maxima	A	R	100.0
Cucurbita moschata	A	R	20.5
Cucurbita pepo	A	O	31.9
Cucurbita pepo	A	R	40.9
Cucurbita pepo	A	O	41.2

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Curcuma zedoaria	A	O	26.3
Cymbopogon martinii	A	O	77.8
Daucus carota	A	O	55.1
Daucus carota	A	R	100.0
Dipsacus sativus	A	O	21.1
Elymus junceus	A	O	27.7
Eschscholzia californica	A	O	44.4
Foeniculum vulgare	A	O	81.8
Forsythia intermedia	A	O	40.4
Forsythia intermedia	A	R	100.0
Fragaria x ananassa	A	R	38.5
Galinsoga ciliata	A	O	46.7
Galium odoratum	A	O	21.6
Galium odoratum	A	R	22.7
Gaultheria hispidula	A	R	71.9
Gaultheria hispidula	A	O	90.2
Gentiana lutea	A	R	100.0
Glechoma hederacea	A	O	32.7
Glycine max	A	S	55.1
Glycine max	A	R	100.0
Glycyrrhiza glabra	A	R	100.0
Guizotia abyssinica	A	O	73.8
Hedeoma pulegioides	A	O	100.0
Helianthus tuberosus	A	O	37.2
Hordeum hexastichon	A	R	34.6
Hordeum hexastichon	A	O	63.6
Hordeum vulgare	A	O	66.7
Hordeum vulgare subsp. Vulgare	A	O	33.3
Hypericum henryi	A	O	66.7
Hyssopus officinalis	A	O	100.0
Ipomoea Batatas	A	O	55.1
Iris versicolor	A	R	24.1
Iris versicolor	A	O	30.8
Lathyrus sativus	A	O	20.6
Laurus nobilis	A	O	33.3
Levisticum officinale	A	O	87.6
Linum usitatissimum	A	R	21.4
Linum usitatissimum	A	O	44.4
Lolium perenne	A	O	30.9

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
<i>Lotus comiculatus</i>	A	O	23.4
<i>Lycopersicon esculentum</i>	A	R	40.0
<i>Matricaria recutita</i>	A	S	56.4
<i>Medicago sativa</i>	A	R	20.5
<i>Melissa officinalis</i>	A	O	100.0
<i>Mentha piperita</i>	A	O	22.7
<i>Mentha piperita</i>	A	R	100.0
<i>Mentha suaveolens</i>	A	O	53.2
<i>Nepeta cataria</i>	A	O	100.0
<i>Nicotiana tabacum</i>	A	O	37.7
<i>Nicotiana tabacum</i>	A	R	44.3
<i>Oenothera biennis</i>	A	O	23.8
<i>Oenothera biennis</i>	A	O	40.0
<i>Oenothera biennis</i>	A	R	100.0
<i>Origanum vulgare</i>	A	O	94.7
<i>Panax quinquefolius</i>	A	O	29.8
<i>Panax quinquefolius</i>	A	O	35.1
<i>Panax quinquefolius</i>	A	O	40.4
<i>Pastinaca sativa</i>	A	O	74.4
<i>Perilla frutescens</i>	A	O	86.7
<i>Perilla frutescens</i>	A	R	100.0
<i>Petasites japonicus</i>	A	O	43.5
<i>Petroselinum crispum</i>	A	O	100.0
<i>Phalaris arundinacea</i>	A	O	21.3
<i>Phalaris canariensis</i>	A	O	22.0
<i>Phaseolus coccineus</i>	A	O	68.8
<i>Phaseolus mungo</i>	A	S	58.5
<i>Phaseolus mungo</i>	A	O	100.0
<i>Phaseolus vulgaris</i>	A	O	33.3
<i>Phaseolus vulgaris</i>	A	O	80.3
<i>Phleum pratense</i>	A	O	20.2
<i>Physalis ixocarpa</i>	A	R	100.0
<i>Pimpinella anisum</i>	A	O	86.7
<i>Plantago major</i>	A	O	99.0
<i>Plectranthus sp.</i>	A	R	50.0
<i>Plectranthus sp.</i>	A	O	64.0
<i>Polygonum aviculare</i>	A	O	55.7
<i>Poterium sanguisorba</i>	A	R	100.0
<i>Poterium Sanguisorba</i>	A	O	23.4

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Prunus Tomentosa	A	O	27.6
Raphanus Sativus	A	O	36.8
Raphanus sativus	A	R	100.0
Rheun rhabarbarum	A	R	33.0
Ribes nigrum	A	R	21.1
Ribes nigrum	A	O	32.6
Ribes rubrum	A	O	24.5
Ribes Sylvestre	A	O	21.1
Ribes Sylvestre	A	R	30.3
Rosa rugosa	A	R	21.1
Rosa rugosa	A	O	36.6
Rosa rugosa	A	O	40.2
Rosmarinus officinalis	A	O	95.7
Rubus canadensis	A	R	25.8
Rubus canadensis	A	O	31.7
Rubus idaeus	A	O	85.9
Rubus idaeus	A	R	66.7
Rumex acetosella	A	O	27.4
Rumex crispus	A	O	25.0
Rumex Scutatus	A	O	21.3
Salvia officinalis	A	O	21.3
Salvia officinalis	A	O	85.1
Salvia officinalis	A	R	100.0
Salvia sclarea	A	O	29.9
Sanguisorba officinalis	A	O	23.1
Sanguisorba officinalis	A	R	48.3
Santolina chamaecyparissus	A	O	52.9
Satureja montana	A	O	87.4
Scorzonera hispanica	A	O	30.8
Secale cereale	A	R	21.2
Senecio vulgaris	A	O	42.6
Sesamum indicum	A	O	27.3
Silybum marianum	A	O	25.2
Sium sisarum	A	O	34.4
Solanum dulcamara	A	R	21.4
Solanum melanocerasum	A	S	44.6
Solanum melanocerasum	A	R	60.0
Solanum tuberosum	A	O	29.2
Solidago sp	A	O	98.4

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Spinacia oleracea	A	O	40.5
Spinacia oleracea	A	S	57.7
Stachys affinis	A	O	23.8
Stachys byzantina	A	O	96.1
Stellaria graminea	A	O	34.4
Stellaria media	A	O	24.6
Symphytum officinale	A	O	87.7
Symphytum officinale	A	O	100.0
Tanacetum cinerariifolium	A	O	70.7
Tanacetum parthenium	A	R	40.0
Tanacetum parthenium	A	O	74.7
Tanacetum parthenium	A	R	100.0
Tanacetum vulgare	A	O	26.7
Tanacetum vulgare	A	R	32.7
Tanacetum vulgare	A	O	98.4
Tanacetum vulgare	A	O	100.0
Taraxacum officinale	A	R	22.7
Taraxacum officinale	A	O	100.0
Teucrium chamaedrys	A	O	100.0
Thymus praecox subsp arcticus	A	O	75.6
Thymus praecox subsp arcticus	A	O	100.0
Thymus serpyllum	A	O	78.1
Thymus vulgaris	A	O	90.9
Trichosanthes kirilowii	A	O	100.0
Trifolium incarnatum	A	S	76.9
Trifolium pannonicum	A	O	72.6
Trifolium pratense	A	O	100.0
Trifolium repens	A	O	100.0
Triticum durum	A	R	22.7
Triticum spelta	A	R	24.0
Triticum spelta	A	O	32.4
Typha latifolia	A	O	52.1
Vaccinium Corymbosum	A	R	53.3
Vaccinium macrocarpon	A	R	44.3
Valeriana officinalis	A	O	23.1
Verbascum thapsus	A	O	65.6
Vitis sp.	A	O	33.7
Vitis sp.	A	R	93.3
Zea mays	A	R	25.0

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
<i>Zea mays</i>	A	R	50.0
<i>Achillea millefolium</i>	G	O	47.7
<i>Agropyron repens</i>	G	O	93.3
<i>Alchemilla mollis</i>	G	O	32.1
<i>Allium ascalonicum</i>	G	O	29.7
<i>Allium sativum</i>	G	R	100.0
<i>Allium schoenoprasum</i>	G	R	100.0
<i>Allium tuberosum</i>	G	R	100.0
<i>Althaea officinalis</i>	G	O	95.6
<i>Amaranthus caudatus</i>	G	O	95.3
<i>Amaranthus gangeticus</i>	G	O	45.7
<i>Amaranthus retroflexus</i>	G	O	78.3
<i>Ambrosia artemisiifolia</i>	G	O	73.8
<i>Amelanchier alnifolius</i>	G	O	50.5
<i>Anethum graveolens</i>	G	O	100.0
<i>Anthemis nobilis</i>	G	O	94.3
<i>Apium graveolens</i>	G	O	21.9
<i>Arctium minus</i>	G	O	65.9
<i>Arctium minus</i>	G	O	71.7
<i>Arctostaphylos uva-ursi</i>	G	O	84.8
<i>Aronia melanocarpa</i>	G	O	31.5
<i>Arrhenatherum elatius</i>	G	S	50.8
<i>Artemisia abrotanum</i>	G	O	52.1
<i>Artemisia absinthium</i>	G	O	59.7
<i>Artemisia absinthium</i>	G	O	72.9
<i>Artemisia Ludoviciana</i>	G	O	64.1
<i>Artemisia Ludoviciana</i>	G	O	90.7
<i>Artemisia vulgaris</i>	G	O	55.2
<i>Artemisia vulgaris</i>	G	O	83.3
<i>Asclepias incarnata</i>	G	O	38.9
<i>Asclepias incarnata</i>	G	O	75.6
<i>Asparagus officinalis</i>	G	R	27.8
<i>Aster sp</i>	G	O	33.3
<i>Atropa belladonna</i>	G	O	96.6
<i>Beta vulgaris</i>	G	O	92.1
<i>Beta vulgaris</i>	G	R	100.0
<i>Beta vulgaris spp. Maritima</i>	G	R	100.0
<i>Borago officinalis</i>	G	O	100.0
<i>Brassica napus</i>	G	R	40.9

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Brassica oleracea	G	R	66.7
Bromus inermis	G	O	38.3
Calamintha nepeta	G	R	25.3
Campanula rapuncululus	G	S	50.8
Campanula rapuncululus	G	O	68.8
Campanula rapuncululus	G	O	69.9
Canna edulis	G	S	50.8
Capsella bursa-pastoris	G	O	30.0
Capsicum annuum	G	O	27.9
Capsicum annuum	G	R	33.3
Capsicum annuum	G	R	35.9
Capsicum annuum	G	R	41.0
Capsicum annuum	G	S	43.1
Capsicum annuum	G	O	56.9
Capsicum frutescens	G	O	60.8
Carthamus tinctorius	G	O	30.2
Carum carvi	G	O	28.6
Chaerophyllum bulbosum	G	O	88.9
Chrysanthemum coronarium	G	O	82.5
Cicer arietinum	G	R	31.8
Cichorium endivia subsp endivia	G	O	100.0
Cichorium intybus	G	O	100.0
Circium arvense	G	S	53.8
Circium arvense	G	O	63.3
Citrullus lanatus	G	O	40.9
Citrullus lanatus	G	O	56.9
Coix Lacryma-Jobi	G	O	100.0
Comus canadensis	G	O	20.2
Comus canadensis	G	O	35.1
Cucumis anguria	G	R	40.0
Cucurbita maxima	G	O	31.4
Cucurbita maxima	G	R	40.9
Cucurbita moschata	G	O	23.0
Cucurbita moschata	G	R	31.8
Cucurbita moschata	G	S	47.7
Cucurbita pepo	G	O	29.8
Cucurbita pepo	G	R	53.3
Cymbopogon martinii	G	O	100.0
Cynara scolymus	G	O	27.3

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Datura metel	G	O	54.1
Daucus carota	G	O	28.6
Daucus carota	G	R	100.0
Digitalis purpurea	G	R	100.0
Dirca palustris	G	R	24.5
Elymus junceus	G	O	38.3
Erigeron speciosus	G	O	73.7
Foeniculum vulgare	G	O	100.0
Forsythia intermedia	G	R	100.0
Forsythia x intermedia	G	O	42.1
Galium odoratum	G	R	63.6
Galium odoratum	G	O	64.7
Gaultheria hispidula	G	R	63.4
Gaultheria hispidula	G	O	69.6
Glechoma hederacea	G	O	50.5
Glechoma hederacea	G	R	100.0
Glycine max	G	O	27.9
Glycine max	G	R	100.0
Guizotia abyssinica	G	R	33.3
Guizotia abyssinica	G	O	83.6
Helianthus annuus	G	R	100.0
Helianthus strumosus	G	R	28.9
Helianthus strumosus	G	Q	52.2
Helianthus tuberosus	G	O	29.3
Helianthus tuberosus	G	O	54.9
Helichrysum thianschanicum	G	O	30.5
Heliotropium arborescens	G	R	29.1
Hysopus officinalis	G	O	100.0
Ipomoea batatas	G	O	45.8
Lactuca sativa	G	O	26.6
Lathyrus sativus	G	O	72.7
Lathyrus sylvestris	G	O	33.3
Lathyrus sylvestris	G	R	56.8
Lavandula angustifolia	G	R	100.0
Lavandula angustifolia	G	O	100.0
Lavandula latifolia	G	O	100.0
Leonurus cardiaca	G	O	100.0
Levisticum officinale	G	O	98.1
Levisticum officinale	G	R	100.0

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
<i>Linum usitatissimum</i>	G	O	42.9
<i>Lolium perenne</i>	G	O	25.5
<i>Lotus tetragonolobus</i>	G	R	49.2
<i>Lupinus polyphylus</i>	G	O	33.3
<i>Lycopersicon esculentum</i>	G	O	29.5
<i>Lycopersicon esculentum</i>	G	R	43.3
<i>Lycopersicon pimpinellifolium</i>	G	R	100.0
<i>Malva moschata</i>	G	O	100.0
<i>Medicago sativa</i>	G	O	32.6
<i>Melissa officinalis</i>	G	O	100.0
<i>Mentha piperita</i>	G	O	40.3
<i>Mentha suaveolens</i>	G	O	79.2
<i>Monarda didyma</i>	G	R	100.0
<i>Nepeta cataria</i>	G	O	100.0
<i>Ocimum basilicum</i>	G	O	80.5
<i>Oenothera biennis</i>	G	O	41.7
<i>Oenothera biennis</i>	G	R	100.0
<i>Origanum majorana</i>	G	O	67.4
<i>Origanum vulgare</i>	G	O	100.0
<i>Oxalis Deppei</i>	G	O	22.2
<i>Oxalis Deppei</i>	G	S	44.6
<i>Oxyria digyna</i>	G	O	21.3
<i>Panax quinquefolius</i>	G	O	25.5
<i>Panax quinquefolius</i>	G	O	38.3
<i>Panicum miliaceum</i>	G	R	83.3
<i>Pennisetum alopecuroides</i>	G	R	21.5
<i>Petasites japonicus</i>	G	O	40.6
<i>Petroselinum crispum</i>	G	O	100.0
<i>Peucedanum cervaria</i>	G	O	42.9
<i>Phaseolus mungo</i>	G	O	100.0
<i>Phaseolus vulgaris</i>	G	O	54.8
<i>Phaseolus vulgaris</i>	G	O	67.2
<i>Plantago major</i>	G	O	95.2
<i>Plectranthus sp.</i>	G	R	100.0
<i>Plectranthus sp.</i>	G	O	100.0
<i>Poa compressa</i>	G	O	20.2
<i>Portulaca oleracea</i>	G	O	60.0
<i>Potentilla anserina</i>	G	R	100.0
<i>Poterium sanguisorba</i>	G	O	21.3

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Poterium sanguisorba	G	R	100.0
Prunella vulgaris	G	O	70.3
Raphanus Raphanistrum	G	O	33.3
Raphanus Raphanistrum	G	R	80.0
Raphanus sativus	G	O	52.6
Raphanus sativus	G	R	100.0
Ribes nigrum	G	O	42.1
Ribes Sylvestre	G	R	32.0
Ricinus communis	G	R	100.0
Rosa rugosa	G	O	52.4
Rosa rugosa	G	O	90.2
Rosmarinus officinalis	G	O	100.0
Rubus idaeus	G	O	34.8
Rubus occidentalis	G	R	60.0
Rubus occidentalis	G	O	65.3
Rumex crispus	G	O	43.3
Ruta graveolens	G	O	23.0
Salvia officinalis	G	O	100.0
Salvia officinalis	G	R	100.0
Sambucus canadensis	G	O	80.6
Sambucus ebulus	G	R	21.1
Sambucus ebulus	G	O	36.8
Sanguisorba officinalis	G	O	43.6
Santolina chamaecyparissus	G	O	50.6
Saponaria officinalis	G	O	85.6
Satureja hortensis	G	R	36.8
Satureja hortensis	G	O	68.4
Senecio vulgaris	G	O	31.1
Sesamum indicum	G	O	27.3
Sium sisanum	G	O	20.8
Sium sisanum	G	O	47.8
Solanum melanocephalum	G	O	23.5
Solanum melongens	G	O	28.6
Solanum melongens	G	R	41.2
Solidago sp	G	O	72.1
Sonchus oleraceus	G	O	95.1
Stachys Affinis	G	O	38.1
Stachys byzantina	G	O	28.6
Stellaria graminea	G	O	39.3

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
<i>Stellaria media</i>	G	O	21.3
<i>Symphytum officinale</i>	G	R	37.8
<i>Symphytum officinale</i>	G	S	43.1
<i>Symphytum officinale</i>	G	O	92.6
<i>Symphytum officinale</i>	G	O	100.0
<i>Tanacetum cinerariifolium</i>	G	O	91.3
<i>Tanacetum parthenium</i>	G	R	60.0
<i>Tanacetum parthenium</i>	G	O	86.7
<i>Tanacetum vulgare</i>	G	O	44.4
<i>Tanacetum vulgare</i>	G	O	67.9
<i>Tanacetum vulgare</i>	G	O	85.7
<i>taraxacum officinale</i>	G	R	40.9
<i>taraxacum officinale</i>	G	O	100.0
<i>Teucrium chamaedrys</i>	G	R	33.3
<i>Teucrium chamaedrys</i>	G	O	66.7
<i>Thymus fragrantissimus</i>	G	O	24.1
<i>Thymus praecox subsp arcticus</i>	G	R	25.0
<i>Thymus praecox subsp arcticus</i>	G	O	92.7
<i>Thymus praecox subsp arcticus</i>	G	O	100.0
<i>Thymus serpyllum</i>	G	O	100.0
<i>Thymus vulgaris</i>	G	O	64.4
<i>Thymus x citriodorus</i>	G	O	72.7
<i>Tiarella cordifolia</i>	G	O	92.4
<i>Trifolium hybridum</i>	G	O	29.5
<i>Trifolium pannonicum</i>	G	O	54.7
<i>Trifolium pratense</i>	G	O	92.9
<i>Trifolium repens</i>	G	O	100.0
<i>Triticum spelta</i>	G	R	37.3
<i>Triticum turgidum</i>	G	O	59.5
<i>Typha latifolia</i>	G	O	23.4
<i>Vaccinium corymbosum</i>	G	O	26.5
<i>Vaccinium angustifolium</i>	G	O	27.7
<i>Vaccinium macrocarpon</i>	G	R	33.0
<i>Valeriana officinalis</i>	G	R	27.6
<i>Valeriana officinalis</i>	G	O	51.3
<i>Verbascum thapsus</i>	G	O	21.3
<i>Vinca minor</i>	G	O	28.6
<i>Vitis sp.</i>	G	R	40.0
<i>Vitis sp.</i>	G	O	42.6

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Zea mays	G	R	26.9
Zea mays	G	R	100.0
Perilla frutescens	T	O	96.0
Perilla frutescens	T	R	100.0
Abies lasiocarpa	T	O	25.6
Agastache foeniculum	T	O	100.0
Agropyron cristatum	T	O	20.2
Agrostis alba	T	O	24.5
Alchemilla mollis	T	O	33.3
Alchemilla mollis	T	S	49.2
Alchemilla mollis	T	O	66.2
Allium ampeloprasum	T	O	100.0
Allium ascalonicum	T	O	29.7
Allium ascalonicum	T	R	38.7
Allium cepa	T	R	100.0
Allium tuberosum	T	R	100.0
Alpinia officinarum	T	R	50.0
Althaea officinalis	T	O	58.6
Amaranthus candathus	T	R	22.9
Amaranthus candathus	T	O	93.2
Amaranthus caudatus	T	O	100.0
Amaranthus gangeticus	T	O	57.1
Amaranthus retroflexus	T	O	100.0
Ambrosia artemisiifolia	T	O	86.9
Amelanchier alnifolia	T	O	50.5
Anthemis nobilis	T	O	100.0
Anthriscus cerefolium	T	O	100.0
Aralia cordata	T	R	100.0
Arctium minus	T	O	68.3
Aronia melanocarpa	T	O	50.0
Aronia prunifolia	T	O	44.7
Arthenatherum elatius	T	O	78.7
Artemisia absinthium	T	O	58.4
Artemisia dracunculul	T	R	28.6
Artemisia dracunculul	T	O	86.3
Artemisia Ludoviciana	T	O	48.8
Artemisia vulgaris	T	O	50.0
Artemisia vulgaris	T	O	82.8
Asclepias incarnata	T	O	72.9

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Asparagus officinalis	T	O	69.8
Aster sp	T	O	35.0
Avena sativa	T	O	31.8
Baptisia tinctoria	T	O	33.8
Beta vulgaris	T	O	25.5
Beta vulgaris	T	O	28.6
Beta vulgaris	T	R	34.6
Beta vulgaris	T	S	43.6
Beta vulgaris	T	O	54.5
Beta vulgaris	T	R	100.0
Beta vulgaris spp. Maritima	T	R	100.0
Brassica nigra	T	R	45.5
Brassica oleracea	T	O	50.0
Brassica oleracea	T	R	100.0
Bromus inermis	T	O	30.9
Calamagrostis arundiflora	T	O	85.6
Calendula officinalis	T	O	23.7
Campanula rapunculus	T	O	25.0
Canna edulis	T	O	26.3
Capsella bursa-pastoris	T	O	21.7
Capsicum annuum	T	O	46.1
Capsicum annuum	T	R	20.5
Capsicum annuum	T	O	23.3
Capsicum annuum	T	R	41.0
Capsicum frutescens	T	O	58.8
Carthamus tinctorius	T	O	36.5
Carum carvi	T	O	88.6
Chaerophyllum bulbosum	T	O	25.0
Chaerophyllum bulbosum	T	O	95.2
Chelidonium majus	T	O	27.1
Chelidonium majus	T	R	50.0
Chenopodium bonus-henricus	T	O	60.0
Chenopodium quinoa	T	R	31.5
Chenopodium quinoa	T	O	50.0
Chrysanthemum coronarium	T	R	65.5
Chrysanthemum coronarium	T	O	100.0
Cicer arietinum	T	R	27.3
Cichorium endivia subsp endivia	T	R	27.3
Cichorium endivia subsp endivia	T	O	97.3

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
<i>Cichorium intybus</i>	T	O	100.0
<i>Cimicifuga racemosa</i>	T	R	22.2
<i>Citricum arvense</i>	T	O	78.3
<i>Citrullus lanatus</i>	T	R	26.7
<i>Citrullus lanatus</i>	T	O	45.5
<i>Citrullus lanatus</i>	T	O	62.7
<i>Coix Lacryma-Jobi</i>	T	O	77.3
<i>Coriandrum sativum</i>	T	O	90.0
<i>Cornus canadensis</i>	T	O	29.3
<i>Cucumis anguria</i>	T	R	50.0
<i>Cucumis anguria</i>	T	O	70.1
<i>Cucumis melo</i>	T	R	20.5
<i>Cucumis melo</i>	T	O	51.0
<i>Cucumis sativus</i>	T	O	23.4
<i>Cucurbita maxima</i>	T	O	50.0
<i>Cucurbita moschata</i>	T	O	84.9
<i>Cucurbita pepo</i>	T	R	20.5
<i>Cucurbita pepo</i>	T	O	39.2
<i>Cucurbita pepo</i>	T	S	53.8
<i>Curcuma zedoaria</i>	T	O	24.6
<i>Cymbopogon citratus</i>	T	O	100.0
<i>Cynara scolymus</i>	T	R	33.3
<i>Dactylis Glomerata</i>	T	O	20.2
<i>Datura metel</i>	T	O	37.8
<i>Datura stramonium</i>	T	R	50.0
<i>Daucus carota</i>	T	R	21.1
<i>Daucus carota</i>	T	O	30.3
<i>Daucus carota</i>	T	O	49.3
<i>Daucus carota</i>	T	S	52.3
<i>Dioscorea batatas</i>	T	S	41.5
<i>Dipsacus sativus</i>	T	O	73.7
<i>Dirca palustris</i>	T	O	88.5
<i>Eleusine coracana</i>	T	S	49.2
<i>Elymus junceus</i>	T	O	35.1
<i>Erigeron speciosus</i>	T	O	67.8
<i>Fagopyrum esculentum</i>	T	O	27.3
<i>Foeniculum vulgare</i>	T	R	80.0
<i>Forsythia intermedia</i>	T	O	50.9
<i>Forsythia x intermedia</i>	T	O	57.9

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Fucus vesiculosus	T	O	83.7
Fucus vesiculosus	T	R	100.0
Galinsoga ciliata	T	O	56.7
Galium aparine	T	O	60.5
Galium odoratum	T	R	31.8
Gaultheria hispidula	T	O	33.7
Gaultheria procumbens	T	O	25.0
Gentiana lutea	T	O	98.1
Gentiana macrophylla	T	O	100.0
Glechoma hederacea	T	O	62.6
Glycine max	T	O	26.2
Glycyrrhiza glabra	T	R	50.0
Glycyrrhiza glabra	T	S	51.3
Guizotia abyssinica	T	O	39.3
Guizotia abyssinica	T	R	100.0
Hedeoma pulegioides	T	O	100.0
Helianthus annuus	T	O	75.8
Helianthus strumosus	T	R	55.6
Helianthus tuberosus	T	O	22.1
Helichrysum angustifolium	T	O	96.1
Helichrysum thianschanicum	T	O	70.5
Heliotropium arborescens	T	O	83.2
Helleborus niger	T	O	24.1
Herba Schizonepetae	T	O	60.5
Hibiscus cannabinus	T	S	52.6
Hordeum vulgare	T	O	77.8
Hydrastis canadensis	T	O	64.9
Hypericum henryi	T	O	100.0
Hypericum perforatum	T	R	31.0
Hyssopus officinalis	T	O	100.0
Inula helenium	T	O	100.0
Ipomoea batatas	T	O	91.5
Iris versicolor	T	O	35.9
Juniperus communis	T	O	83.8
Krameria Triandra	T	O	25.6
Lactuca sativa	T	O	100.0
Lathyrus Sativus	T	R	27.3
Lathyrus Sativus	T	O	33.3
Lathyrus sylvestris	T	O	20.3

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Lathyrus sylvestris	T	R	100.0
Laurus nobilis	T	R	23.8
Laurus nobilis	T	O	26.0
Lavandula latifolia	T	R	100.0
Lavandula latifolia	T	O	100.0
Lens culinaris subsp culinaris	T	O	21.3
Leonorus cardiaca	T	O	57.9
Lepidium sativum	T	O	31.6
Levisticum officinale	T	O	90.5
Levisticum officinale	T	R	100.0
Linum usitatissimum	T	O	23.8
Lonicera syringantha	T	O	79.5
Lotus corniculatus	T	R	46.7
Lupinus polyphyllus lindl.	T	O	36.6
Lycopersicon esculentum	T	R	60.0
Lycopersicon pimpinellifolium	T	R	100.0
Malus hupehensis	T	R	100.0
Malva sylvestris	T	O	100.0
Matricaria spp.	T	O	100.0
Medicago sativa	T	O	27.7
Melissa officinalis	T	O	100.0
Menyanthes trifoliata	T	O	44.9
Menyanthes trifoliata	T	R	50.0
Miscanthus sinensis	T	R	23.5
Miscanthus sinensis	T	O	24.6
Nepeta cataria	T	O	78.9
Ocimum Basilicum	T	R	35.7
Ocimum Basilicum	T	O	100.0
Oenothera biennis	T	R	100.0
Origanum vulgare	T	O	94.7
Origanum vulgare	T	R	100.0
Oxalis Deppei	T	O	21.1
oxyria digyna	T	O	24.6
Panax quinquefolius	T	O	39.4
Panicum miliaceum	T	R	20.8
Pastinaca sativa	T	O	21.3
Pastinaca sativa	T	R	25.0
Pastinaca sativa	T	R	25.0
Pastinaca sativa	T	O	79.4

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Pastinaca sativa	T	O	100.0
Petasites Japonicus	T	O	29.0
Petroselinum crispum	T	R	40.0
Peucedanum oreaseelinum	T	S	55.1
Pfaffia paniculata	T	R	100.0
Phaseolus mungo	T	O	70.2
Phaseolus vulgaris	T	O	71.4
Phaseolus vulgaris	T	O	100.0
Phaseolus vulgaris	T	R	100.0
Physalis ixocarpa	T	O	25.5
Pimpinella anisum	T	R	100.0
Pimpinella anisum	T	O	100.0
Pisum sativum	T	O	37.5
Plantago major	T	O	100.0
Plectranthus sp.	T	O	36.0
Plectranthus sp.	T	R	80.0
Poa pratensis	T	O	38.3
Populus X petrowskyana	T	O	25.5
Prunella vulgaris	T	O	23.3
Prunella vulgaris	T	O	88.1
Raphanus raphanistrum	T	O	73.7
Raphanus raphanistrum	T	R	100.0
Raphanus sativus	T	S	60.3
Raphanus sativus	T	R	100.0
Reseda luteola	T	O	100.0
Rheum officinale	T	O	36.8
Ribes sativum	T	O	20.4
Ribes Sylvestre	T	R	44.3
Ricinus communis	T	R	100.0
Rosmarinus officinalis	T	R	60.0
Rosmarinus officinalis	T	O	100.0
Rubus canadensis	T	R	32.0
Rubus canadensis	T	O	34.7
Rubus idaeus	T	O	93.5
Rubus idaeus	T	R	100.0
Rubus occidentalis	T	O	38.6
Rubus occidentalis	T	S	52.3
Rubus occidentalis	T	R	100.0
Rumex acetosella	T	O	26.3

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Rumex crispus	T	O	30.0
Rumex scutatus	T	O	23.0
Ruta graveolens	T	O	62.1
Saccharum officinarum	T	O	27.0
Salvia officinalis	T	O	92.0
Salvia officinalis	T	O	93.3
Sambucus canadensis	T	O	42.9
Sanguisorba officinalis	T	O	68.6
Santolina chamaecyparissus	T	O	66.7
Saponaria officinalis	T	O	36.6
Saponaria officinalis	T	O	84.7
Satureja montana	T	O	80.5
Satureja repandra	T	O	47.1
Senecio vulgaris	T	O	44.3
Setaria italica	T	O	27.9
Silybum marianum	T	O	31.0
Sium sisarum	T	O	24.8
Sium sisarum	T	R	25.5
Solanum dulcamara	T	R	21.4
Solanum melongena	T	R	25.8
Solanum melongena	T	O	34.9
Solanum tuberosum	T	O	38.1
Solidago canadensis	T	O	100.0
Solidago sp	T	O	73.8
Sonchus oleraceus	T	O	100.0
Sorghum durra	T	O	23.8
Spinacia oleracea	T	R	29.3
Stachys affinis	T	R	23.6
Stachys affinis	T	O	23.9
Stachys affinis	T	O	50.0
Stachys byzantina	T	O	41.6
Stellaria graminea	T	O	62.3
Stipa capillata	T	O	27.1
Symphytum officinale	T	R	28.9
Symphytum officinale	T	O	87.7
Symphytum officinale	T	O	97.8
Tanacetum cinerariifolium	T	O	62.7
Tanacetum parthenium	T	O	94.7
Tanacetum vulgare	T	R	28.9

Table 6
Cath D

Latin name	Stress	Extract	Inhibition (%)
Tanacetum vulgare	T	S	47.7
Tanacetum vulgare	T	O	75.6
Tanacetum vulgare	T	O	95.2
Tanacetum vulgare	T	O	100.0
Taraxacum officinale	T	O	95.3
Thymus praecox subsp arcticus	T	R	24.4
Thymus praecox subsp arcticus	T	O	60.0
Thymus praecox subsp arcticus	T	O	90.0
Thymus pseudolanuginosus	T	O	83.9
Thymus serpyllum	T	O	100.0
Tiarella cordifolia	T	O	93.3
Tragopogon portifolius	T	O	34.4
Tragopogon portifolius	T	O	58.0
Trichosanthes kinlowii	T	R	25.3
Trifolium pannonicum	T	O	61.1
Trifolium pratense	T	O	92.9
Trifolium repens	T	O	100.0
Triticum aestivum	T	O	29.5
Triticum durum	T	O	100.0
Triticum turgidum	T	O	29.7
Ulmus americana	T	O	76.9
Ulmus americana	T	O	81.0
Urtica dioica	T	R	40.9
Vaccinium angustifolium	T	R	26.3
Vaccinium angustifolium	T	O	28.3
Vaccinium angustifolium	T	O	47.6
Vaccinium angustifolium	T	R	100.0
Vaccinium corymbosum	T	O	21.4
Vaccinium macrocarpon	T	R	80.0
Valeriana officinalis	T	O	43.6
Vicia sativa	T	S	43.1
Vitis sp.	T	O	26.7
Vitis sp.	T	R	93.3
Zea mays	T	R	21.2
Zea mays	T	R	100.0

Table 7
Cath G

Nonlatin	Stress	Extrat	Inhibition (%)
Achillea millefolium	A	V	40.1
Achillea millefolium	A	O	29.5
Acorus calamus	A	R	68.6
Adiantum pedatum	A	R	29.7
Agastache foeniculum	A	O	36.8
Agastache foeniculum	A	S	22.4
Agropyron rupens	A	S	24.5
Alchemilla mollis	A	W	100.0
Alchemilla mollis	A	S	81.1
Alchemilla mollis	A	O	51.5
Alchemilla mollis	A	S	78.6
Alchemilla mollis	A	O	82.9
Alchemilla mollis	A	S	35.6
Alkanna tinctoria	A	O	51.6
Alkanna tinctoria	A	R	100.0
Allium Tuberosum	A	S	20.6
Althaea officinalis	A	R	21.6
Althaea officinalis	A	S	39.6
Ambrosia artemisiifolia linné	A	O	47.6
Ambrosia artemisiifolia linné	A	R	38.2
Amelanchier sanguinea (Pursh) DC.	A	W	29.7
Angelica archangelica	A	S	68.1
Anthemis tinctoria	A	O	26.0
Anthemis tinctoria	A	V	28.4
Anthemis tinctorium	A	O	46.9
Arachis hypogaea	A	V	84.5
Aralia nudicaulis	A	S	61.9
Arctostaphylos uva-ursi	A	O	25.0
Arctostaphylos uva-ursi	A	R	100.0
Arctostaphylos uva-ursi	A	S	38.4
Aronia melanocarpa (Michx.) Eli.	A	O	24.4
Aronia melanocarpa (Michx.) Eli.	A	R	27.3
Aronia melanocarpa (Michx.) Eli.	A	W	47.8
Artemisia dracuncululus sativa	A	W	32.2
Artemisia Ludoviciana	A	O	88.8
Aster sp ?	A	O	47.2
Aster sp ?	A	R	100.0
Beta vulgaris	A	R	23.9
Brassica napus	A	R	22.3

Table 7
Cath G

Latin	Stress	Extrait	Inhibition (%)
Brassica napus	A	S	22.8
Brassica nigra	A	S	47.2
Brassica rapa	A	S	46.0
Capsella bursa-pastoris (linné) medicus	A	R	43.4
Chaerophyllum bulbosum	A	V	90.7
Chaerophyllum bulbosum	A	W	57.4
Chenopodium bonus-henricus	A	R	23.7
Chichorium endivia	A	O	53.0
Chrysanthemum leucanthemum linne	A	O	55.5
Cicer arietinum	A	R	26.2
Cichorium intybus	A	O	100.0
Cichorium intybus	A	V	83.6
Cichorium intybus	A	O	51.0
Crataegus sp ?	A	O	100.0
Crataegus sp ?	A	R	81.6
Cymbopogon citratus	A	S	33.9
Datisca cannabina	A	S	20.2
Daucus carota	A	O	62.0
Daucus carota	A	W	99.4
Dirca palustris	A	R	24.9
Dirca palustris	A	S	47.0
Dryopteris filix-mas	A	O	24.1
Dryopteris filix-mas	A	R	95.7
Echinacea purpurea	A	V	80.7
Echinacea purpurea	A	W	100.0
Filipendula rubra	A	O	20.2
Filipendula rubra	A	S	77.6
Foeniculum vulgare	A	R	23.3
Fragaria x ananassa	A	O	32.3
Fragaria x ananassa	A	W	100.0
Fragaria x ananassa	A	S	100.0
Fragaria Xananassa	A	S	100.0
Frangoria x ananassa	A	W	100.0
Frangoria x ananassa	A	V	100.0
Galinsoga ciliata (Rofiresque) Blake	A	R	21.2
Gaultheria hispidula (L.) Muhl.	A	R	85.3
Gaultheria hispidula (L.) Muhl.	A	R	100.0
Gaultheria procumbens	A	W	56.1
Glycine Max	A	S	36.0

Table 7
Cath G

Non lethal	Stress	Extr.	Inhibition (%)
Glycine max	A	S	38.7
Glycyrrhiza glabra	A	W	46.2
Glycyrrhiza glabra	A	S	35.5
Glycyrrhiza glabra	A	R	100.0
Hamamelis virginiana	A	R	100.0
Helianthus tuberosus	A	W	22.6
Helichrysium angustifolium	A	V	82.6
Heliotropium arborescens	A	O	57.3
Heliotropium arborescens	A	R	57.2
Hordeum vulgare	A	O	34.3
Hypericum henryi	A	O	30.4
Hypericum perforatum	A	R	100.0
Inula helenium	A	S	64.0
Isatis tinctoria	A	O	94.0
Laurus nobilis	A	S	49.9
Lavandula latifolia	A	W	100.0
Lavandula latifolia	A	V	48.7
Leonurus cardiaca	A	R	100.0
Levisicum officinale	A	V	46.8
Lolium multiflorum	A	O	34.1
Melissa officinalis	A	O	54.1
Melissa officinalis	A	W	100.0
Melissa officinalis	A	V	80.7
Melissa officinalis	A	O	100.0
Mentha pulegium	A	O	29.1
Mentha spicata	A	V	47.0
Nepeta cataria	A	V	57.6
Ocrotthera biennis	A	S	33.1
Oenothera biennis linné	A	O	47.4
Oenothera biennis linné	A	R	100.0
Origanum majorana	A	S	34.6
Origanum vulgare	A	V	65.9
Origanum vulgare	A	W	48.2
Origanum vulgare	A	V	70.0
Origanum vulgare	A	W	62.9
Origanum vulgare	A	O	68.4
Origanum vulgare	A	V	81.9
Origanum vulgare	A	W	61.3
Origanum vulgare	A	S	21.7

Table 7
Cath G

Nonlatin	Stress	Extrat.	Inhibition (%)
Oxyria digyna	A	V	40.1
Penilla frutescens	A	V	65.0
Penilla frutescens	A	W	51.9
Peucedanum cervaria	A	R	28.3
Peucedanum cervaria	A	R	45.1
Phaseolus Vulgaris	A	S	38.4
Phaseolus Vulgaris	A	S	26.3
Phytolacca americana	A	S	27.8
Plantago coronopus	A	O	22.7
Polygonum aviculare linné	A	R	76.0
Poterium sanguisorba	A	O	20.1
Poterium sanguisorba	A	R	93.1
Poterium sanguisorba	A	V	47.7
Poterium sanguisorba	A	S	36.1
Pteridium aquilinum	A	O	25.7
Pteridium aquilinum	A	R	100.0
Ribes nidigrolana	A	W	51.8
Ribes Nigrum	A	W	100.0
Ribes nigrum	A	S	33.6
Ribes nigrum L.	A	W	58.8
Ribes nigrum L.	A	O	21.5
Ribes Salivum	A	R	21.4
Ricinus communis	A	R	100.0
Rosa rugosa thunb.	A	W	20.1
Rosa rugosa thunb.	A	W	100.0
Rosa rugosa thunb.	A	R	100.0
Rosmarinus officinalis	A	O	100.0
Rosmarinus officinalis	A	R	64.0
Rosmarinus officinalis	A	W	55.6
Rosmarinus officinalis	A	V	76.7
Rubus allegheniensis	A	S	32.1
Rubus canadensis	A	W	94.5
Rubus canadensis	A	S	64.2
Rubus idaeus	A	S	86.0
Rubus idaeus	A	O	29.5
Rubus idaeus	A	W	38.7
Rubus idaeus	A	S	41.0
Rubus idaeus	A	W	100.0
Rubus idaeus L.	A	V	30.2

Table 7
Cath G

Non latin	Stress	Extrait	Inhibition (%)
Rubus idaeus L.	A	W	29.4
Rubus idaeus L.	A	S	100.0
Rubus idaeus	A	R	100.0
Rubus idaeus	A	S	67.1
Rubus occidentalis	A	S	100.0
Rumex crispus linné	A	R	100.0
Salvia elegans	A	W	69.7
Salvia officinalis	A	W	100.0
Salvia officinalis	A	V	58.0
Salvia officinalis	A	O	100.0
Salvia officinalis	A	R	39.9
Salvia officinalis	A	V	45.7
Salvia officinalis	A	W	65.4
Salvia sclarea	A	W	29.1
Santolina	A	W	65.5
Satureja montana	A	V	72.2
Satureja montana	A	W	100.0
Satureja montana	A	O	90.5
Satureja montana	A	V	28.9
Scutellaria lateriflora	A	S	23.7
Sonchus oleraceus L.	A	O	25.9
Sorghum dochna bicolor	A	O	25.6
Sorghum durra (Stapif)	A	O	46.9
Symphytum officinale	A	O	99.4
Symphytum officinale	A	O	97.8
Tanacetum cinerariifolium	A	W	28.2
Tanacetum parthenium	A	W	34.8
Tanacetum vulgare	A	W	80.0
Tanacetum vulgare	A	V	53.8
Tanacetum vulgare	A	O	35.9
Tanacetum vulgare	A	R	68.8
Tanacetum vulgare "Goldsticks"	A	V	51.9
Taraxacum officinale	A	W	28.5
Taraxacum officinale	A	V	82.3
Thymus praecox subsp arctitus	A	O	43.4
Thymus pseudolanuginosus	A	V	29.7
Thymus serpyllum	A	O	100.0
Thymus serpyllum	A	W	73.6
Thymus serpyllum	A	V	74.9

Table 7
Cath G

Non latin	Stress	Extrat	Inhibition (%)
Thymus vulgaris	A	O	35.6
Thymus vulgaris	A	R	66.5
Thymus vulgaris "Argenteus"	A	V	73.9
Triticum furdum??	A	O	21.6
Vaccinium augustifolium	A	S	26.1
Vaccinium Corymbosum	A	W	95.7
Vaccinium macrocarpon	A	W	46.1
Valerianella locusta	A	S	96.0
Veronica officinalis	A	S	26.4
Viburnum trilobum Marsh.	A	W	25.0
Vicia sativa	A	O	28.2
Vicia villosa	A	O	34.5
Vitia sp.	A	W	26.0
Vitia sp.	A	S	41.6
Vitia sp.	A	W	100.0
Vitia sp.	A	S	30.8
Vitia sp.	A	O	22.3
Vitia sp.	A	S	28.5
Zea Mays	A	S	32.3
Zea Mays	A	S	34.5
Achillea millefolium	G	W	30.6
Achillea millefolium	G	V	71.1
Aconitum napellus	G	R	100.0
Acorus calamus	G	R	27.8
Adiantum pedatum	G	R	100.0
Agastache toeniculum "Snow Pike"	G	V	46.9
Agastache toeniculum "Snow Pike"	G	W	71.5
Alchemilla mollis	G	W	100.0
Alchemilla mollis	G	O	52.6
Alchemilla mollis	G	S	80.7
Alchemilla mollis	G	O	33.4
Alchemilla mollis	G	S	38.7
althaea officinalis	G	R	27.5
althaea officinalis	G	S	36.9
Ambrosia artemisiifolia linné	G	O	48.4
Ambrosia artemisiifolia linné	G	R	36.0
Amelanchier sanguinea (Pursh) DC.	G	W	46.5
Angelica archangelica	G	S	39.1
Arachis hypogaea	G	V	81.8

Table 7
Cath G

Non latn	Stress	Extrat	Inhibition (%)
Aralia nudicaulis	G	S	44.9
Arcium minus (Hill) Bernhardt	G	O	35.6
Arctostaphylos uva-ursi	G	S	59.9
Aronia melanocarpa (Michx.) Eil.	G	W	28.4
Artemisia Ludoviciana	G	O	66.0
Aster sp ?	G	O	51.8
Aster sp ?	G	R	100.0
Beta vulgaris	G	R	26.5
Brassica napus	G	R	32.9
Brassica napus	G	S	33.5
Brassica oleracea	G	S	100.0
Calamintha nepeta	G	V	51.5
Calendula officinalis L.	G	O	26.7
Canna edulis	G	O	20.6
Chaerophyllum bulbosum	G	O	37.0
Chaerophyllum bulbosum	G	V	88.6
Chaerophyllum bulbosum	G	W	26.5
Chichorium endivia	G	S	25.2
Chrysanthemum leucanthemum linné	G	O	44.2
Cicer anethum	G	R	26.1
Cichorium endivia	G	O	23.7
Cichorium intybus	G	O	100.0
Cichorium intybus	G	V	79.2
Cichorium intybus	G	O	82.5
Crataegus sp ?	G	W	27.9
Cynara scolymus	G	O	66.3
Dirca palustris	G	R	28.8
Dirca palustris	G	S	85.2
Dryopteris filix-mas	G	R	100.0
Echinacea purpurea	G	V	84.2
Echinacea purpurea	G	O	83.2
Erigeron speciosus (Lindl.) D.C.	G	O	46.1
Fagopyrum esculentum	G	O	27.5
Filipendula rubra	G	S	59.6
Galinsoga ciliata (Rafinesque) Blake	G	R	20.5
Galium odoratum	G	R	56.8
Gaultheria hispidula (L.) Muhl	G	O	100.0
Glycine max	G	O	22.8
Glycyrrhiza glabra	G	S	28.4

Table 7
Cath G

Nonleth	Stress	Extrait	Inhibition (%)
Hamamelis virginiana	G	O	33.8
Hamamelis virginiana	G	R	100.0
Helianthus annuus	G	R	26.5
Helianthus strumosus	G	O	21.2
Helianthus tuberosus L.	G	W	48.4
Helichrysum angustifolium	G	W	38.1
Helichrysum angustifolium	G	V	83.8
Helichrysum thianschanicum Regel	G	O	61.3
Heliotropium arborescens	G	O	56.2
Heliotropium arborescens	G	R	54.9
Humulus lupulus	G	V	70.5
Humulus lupulus	G	S	43.0
Hypericum henryi	G	O	31.0
Hypericum perforatum	G	R	100.0
Inula helenium	G	W	85.3
Inula helenium	G	V	74.7
Inula helenium	G	S	37.4
Ipomea batatas	G	O	39.0
Isatis tinctoria	G	O	100.0
Laportea canadensis	G	O	26.9
Laurus nobilis	G	W	51.5
Laurus nobilis	G	S	100.0
Lavendula angustifolia	G	V	44.4
Lavendula latifolia	G	V	44.8
Ledum groenlandicum	G	S	100.0
Levistecum officinale	G	W	39.6
Matricaria recutita	G	O	100.0
Melissa officinalis	G	W	98.0
Melissa officinalis	G	V	76.3
Melissa officinalis	G	R	36.6
Melissa officinalis	G	O	80.6
Mentha arvensis	G	O	83.5
Mentha piperita	G	O	79.0
Mentha piperita vulgaris	G	V	45.9
Mentha pulegium	G	O	47.0
Mentha spicata	G	V	73.9
Mentha spicata	G	O	81.3
Mentha spicata	G	O	93.0
Monarda didyma	G	S	35.8

Table 7
Cath G

Nom latin	Stress	Extrait	Inhibition (%)
N	G	R	100.0
N	G	R	34.8
Nepeta cataria	G	V	38.4
Ocimum basilicum	G	W	20.4
Ocimum basilicum	G	O	89.9
Ocimum basilicum	G	V	31.3
Ocimum basilicum	G	W	82.3
Oenothera biennis linné	G	O	62.8
Oenothera biennis linné	G	R	100.0
Oenothera biennis linné	G	R	100.0
Oenothera biennis Linné	G	S	100.0
Origanum vulgare	G	V	67.1
Origanum vulgare	G	V	65.5
Origanum vulgare	G	W	58.1
Origanum vulgare	G	V	70.5
Origanum vulgare	G	W	34.5
Origanum vulgare	G	V	60.1
Origanum vulgare	G	O	100.0
Origanum vulgare	G	S	28.5
Origanum vulgare	G	O	83.7
Origanum vulgare	G	S	22.1
Oxyria digyna	G	V	57.7
Perilla frutescens	G	V	75.8
Peucedanum cervaria	G	R	37.5
Peucedanum cervaria	G	R	25.3
Plantago major	G	O	31.7
Plectranthus sp.	G	V	28.5
Portulaca oleracea linné	G	O	37.8
Potentilla anserina	G	S	21.1
Poterium sanguisorba	G	V	72.1
Poterium sanguisorba	G	S	65.9
Poterium sanguisorba	G	O	63.6
Poterium sanguisorba	G	W	28.7
Prunella vulgaris	G	O	40.7
Pteridium aquilinum	G	O	25.7
Pteridium aquilinum	G	R	100.0
Raphanus Raphanistrum	G	R	42.7
Ribes nidigrolaria	G	W	45.9
Ribes nigrum	G	W	35.9

Table 7
Cath G

Non latin	Stress	Extrat	Inhibition (%)
Ribes Silvestris	G	W	34.9
Ribes Uva-crispa	G	S	30.5
Ricinus communis	G	R	95.0
Ricinus communis	G	S	48.3
Rosa rugosa thunb.	G	W	40.3
Rosa rugosa thunb.	G	S	97.8
Rosmarinus officinalis	G	O	100.0
Rosmarinus officinalis	G	R	54.1
Rosmarinus officinalis	G	W	77.7
Rosmarinus officinalis	G	V	72.2
Rubus canadensis	G	S	25.3
Rubus idaeus L.	G	W	31.1
Rubus idaeus	G	S	100.0
Rubus idaeus	G	R	37.6
Rubus idaeus	G	O	34.8
Rubus occidentalis	G	S	93.3
Rubus occidentalis	G	O	22.7
Rubus occidentalis	G	S	21.6
Rumex crispus linné	G	R	100.0
Rumex crispus linné	G	R	100.0
Salvia elegans	G	V	41.3
Salvia elegans	G	W	62.9
Salvia officinalis	G	R	43.3
Salvia officinalis	G	O	55.1
Salvia officinalis	G	W	100.0
Salvia officinalis	G	V	52.5
Salvia officinalis	G	O	100.0
Salvia officinalis	G	R	38.8
Salvia officinalis	G	V	49.5
Salvia officinalis	G	W	95.3
Salvia officinalis	G	W	41.3
Salvia sclarea	G	W	31.1
Sarriette commune	G	O	59.7
Sarriette vivace	G	O	72.3
Sarriette vivace	G	S	26.0
Satureja montana	G	V	78.5
Satureja montana	G	W	100.0
Solanum tuberosum	G	O	35.8
Sonchus oleraceus L.	G	O	41.0

Table 7
Cath G

Non latin	Stress	Extrat	Inhibition (%)
Sorghum dochina	G	S	100.0
Sorghum sudanense	G	O	32.6
Sorghum sudanense	G	W	39.7
Symphytum officinale	G	V	79.4
Symphytum officinale	G	O	74.6
Tanacetum parthenium	G	V	23.1
Tanacetum parthenium	G	W	24.3
Tanacetum vulgare	G	W	20.8
Tanacetum vulgare	G	O	32.0
Tanacetum vulgare	G	O	58.5
Tanacetum vulgare "Goldsticks"	G	V	44.8
Taraxacum officinale	G	V	58.2
Thymus fragantissimus	G	R	39.9
Thymus herba-barona	G	W	26.6
Thymus herba-barona	G	V	35.7
Thymus praecox subsp arctius	G	O	78.0
Thymus serpyllum	G	V	47.4
Thymus serpyllum	G	O	100.0
Thymus serpyllum	G	W	22.6
Thymus serpyllum	G	V	70.2
Thymus vulgaris	G	O	40.8
Thymus vulgaris	G	W	37.3
Thymus vulgaris "Argenteus"	G	V	87.7
Thymus x citriodorus	G	W	27.2
Vaccinium angustifolium	G	S	41.7
Vaccinium macrocarpon	G	W	63.5
Viburnum trilobum Marsh.	G	R	67.7
Viburnum trilobum Marsh.	G	W	23.6
Vicia sativa	G	O	38.5
Vicia villosa	G	O	25.2
Vitia sp.	G	S	24.8
Vitia sp.	G	W	100.0
Vitia sp.	G	R	100.0
Vitia sp.	G	S	20.8
Zea mays	G	O	53.7
Perilla frutescens	T	O	100.0
Perilla frutescens	T	W	61.7
Perilla frutescens	T	V	75.6
Achillea millefolium	T	W	41.8

Table 7
Cath G

Non Latin	Stress	Extrat	Inhibition (%)
Achillea millefolium	T	V	31.5
Acorus calamus	T	R	68.4
Acorus calamus	T	S	39.2
Adiantum pedatum	T	R	100.0
Agastache foeniculum	T	O	78.0
Agastache foeniculum "Snow Pike"	T	W	34.5
Agastache foeniculum "Snow Pike"	T	V	54.3
Agrimonia eupatoria	T	W	100.0
Alchemilla mollis	T	V	37.1
Alchemilla mollis	T	W	100.0
Alchemilla mollis	T	S	98.8
Alchemilla mollis	T	O	24.3
Alchemilla mollis	T	S	83.7
Alchemilla mollis	T	O	80.0
Althaea officinalis	T	S	34.1
Althaea officinalis	T	S	34.3
Althaea officinalis	T	S	30.8
Ambrosia artemisiifolia linné	T	O	61.6
Ambrosia artemisiifolia linné	T	R	52.1
Amelanchier sanguinea x A. laevis	T	S	38.6
angelica archangelica	T	S	54.8
Anthemis tinctorium	T	O	67.7
Arachis hypogaea	T	V	85.1
Aralia nudicaulis	T	S	74.2
Arctostaphylos uva-ursi	T	R	98.8
Arctostaphylos uva-ursi	T	S	82.4
Aronia prunifolia	T	W	27.3
Artemisia draculus	T	S	20.2
Artemisia draculus	T	S	37.2
Artemisia Ludoviciana	T	O	54.8
Aster sp ?	T	O	43.4
Aster sp ?	T	R	99.9
Ayperus esculentus	T	W	46.9
Beta vulgaris	T	R	81.4
Beta vulgaris	T	O	30.6
Betula glandulosa	T	W	58.2
Borago officinalis	T	O	20.2
Brassica juncea	T	R	56.6
Brassica napus	T	R	34.1

Table 7
Cath G

Nom latin	Stress	Extrait	Inhibition (%)
Brassica nigra	T	S	32.3
Brassica rapa	T	R	21.4
Calamintha nepeta	T	V	71.4
Calamintha nepeta	T	W	30.3
Canna edulis	T	O	31.9
Canneberge	T	R	66.3
Capsella bursa-pastoris (linné) medicus	T	R	37.1
Carya cordiformis	T	W	100.0
Chaerophyllum bulbosum	T	V	86.0
Chrysanthemum leucanthemum linne	T	O	45.4
Cichorium intybus	T	V	74.8
Cichorium intybus	T	W	23.8
Cichorium intybus	T	O	38.9
Cimicifuga racemosa	T	W	65.1
Citrullus colocynthus	T	S	50.2
Citrus limetoides	T	O	45.1
Citrus limetoides	T	V	28.9
Citrus limon	T	O	25.9
Citrus limon	T	V	43.3
Coix Lacryma-Jobi	T	O	22.1
Coriandrum sativum	T	W	62.0
Crataegus sp ?	T	R	44.0
Crataegus submollis	T	S	40.7
Crataegus submollis	T	S	29.3
Curcuma longa syn. C. domestica	T	O	22.2
Cynara scolymus	T	R	42.2
Dioscorea batatas	T	O	29.1
Dioscorea batatas	T	O	28.9
Diospiros Kaki	T	V	57.8
Dirca palustris	T	S	39.2
Dolichus lablab	T	R	42.9
Dryopteris filix-mas	T	O	24.9
Dryopteris filix-mas	T	R	100.0
Echinacea purpurea	T	V	78.9
Echinacea purpurea	T	W	95.8
Echinacea purpurea	T	O	53.7
Erigeron speciosus (Lindl.) D.C.	T	O	96.2
Fragaria	T	O	42.7
Fragaria x ananassa	T	S	100.0

Table 7
Cath G

Non latin	Stress	Extrait	Inhibition (%)
Fragaria x ananassa	T	S	100.0
Fruit de la passion	T	O	30.2
Fucus vesiculosus	T	O	93.3
Galinoga ciliata (Rofresque) Blake.	T	R	33.0
Galium odoratum	T	R	27.0
Gaultheria hispidula (L.) Muhl	T	W	100.0
Gaultheria procumbens	T	W	30.0
Gaultheria procumbens	T	S	100.0
Glycine max Envy	T	O	20.1
Glycyrrhiza glabra	T	W	47.9
Guizotia abyssinica	T	R	74.1
Guizotia abyssinica	T	S	22.7
Hamamelis virginiana	T	O	100.0
Hamamelis virginiana	T	R	100.0
Helenium hoopesii	T	O	21.7
Helenium hoopesii	T	S	24.6
Helianthus annuus	T	O	21.0
Helianthus strumosus	T	O	85.6
Helianthus tuberosa	T	V	64.5
Helianthus tuberosa	T	W	100.0
Helichrysum angustifolium	T	O	100.0
Helichrysum angustifolium	T	W	87.0
Helichrysum angustifolium	T	V	84.4
Helichrysum angustifolium	T	S	92.3
Helichrysum thianschanicum Regel	T	O	59.5
Heliotropium arborescens	T	O	85.1
Hibiscus cannabinus	T	O	25.0
Humulus lupulus	T	S	21.4
Humulus lupulus	T	S	21.5
Humulus lupulus	T	R	88.4
Humulus lupulus	T	S	22.5
Hypericum perforatum	T	R	100.0
Inula helenium	T	V	97.1
Inula helenium	T	W	69.0
Inula helenium	T	S	29.3
Ipomea batatas	T	O	27.0
Iris versicolor	T	R	22.9
Juniperus communis	T	R	100.0
Krameria Triandra	T	O	52.6

Table 7
Cath G

Non latin	Stress	Extrait	Inhibition (%)
Lathyrus sylvestris	T	R	32.5
Laurus nobilis	T	S	100.0
Lavendula angustifolia	T	V	74.8
Lavendula angustifolia	T	W	70.2
Lavendula latifolia	T	W	85.6
Lavendula latifolia	T	V	63.3
Lavendula latifolia	T	O	20.2
Ledum groenlandicum	T	R	100.0
Ledum groenlandicum	T	S	94.1
Lepidium sativum	T	O	20.5
Litchi chinensis	T	S	100.0
Lolium multiflorum	T	O	22.7
Lonicera ramosissima	T	S	30.9
Lotus corniculatus	T	R	60.2
Malus	T	V	23.1
Malva moschata	T	S	31.4
Melissa officinalis	T	V	81.4
Melissa officinalis	T	W	87.5
Melissa officinalis	T	O	100.0
Melissa officinalis	T	V	36.0
Melissa officinalis	T	W	36.8
Melissa officinalis	T	O	100.0
Melissa officinalis	T	R	30.3
mentha arvensis	T	R	67.2
Mentha piperita	T	S	20.8
Mentha piperita	T	O	100.0
Mentha piperita	T	S	26.9
Mentha piperita	T	O	97.8
Mentha piperita vulgaris	T	W	20.2
Mentha piperita vulgaris	T	V	42.5
Mentha pulegium	T	O	100.0
Mentha spicata	T	W	51.6
Mentha spicata	T	V	81.8
Mentha spicata	T	O	100.0
Mentha spicata	T	O	100.0
Mentha spicata	T	S	23.2
Nepeta cataria	T	V	62.8
Ocimum Basilicum	T	V	41.1
Ocimum Basilicum	T	W	40.0

Table 7
Cath G

Nome latin	Stress	Extrait	Inhibition (%)
Ocimum Basilicum	T	O	28.4
Oenothera biennis linné	T	O	67.3
Oenothera biennis linné	T	R	100.0
Onobrychis viciifolia	T	O	34.0
Origanum marjorana	T	O	29.5
Origanum vulgare	T	V	55.5
Origanum vulgare	T	W	67.7
Origanum vulgare	T	W	46.4
Origanum vulgare	T	V	68.6
Origanum vulgare	T	W	99.9
Origanum vulgare	T	V	42.0
Origanum Vulgare	T	V	28.8
Origanum Vulgare	T	W	46.7
Origanum vulgare	T	O	100.0
Origanum vulgare	T	W	51.7
Origanum vulgare	T	S	30.8
Origanum vulgare	T	O	25.4
Origanum vulgare	T	S	38.2
oxyria digyna	T	V	23.1
Pastinaca sativa	T	O	33.1
Pastinaca sativa	T	R	22.2
Petroselinum crispum Nyman ex.A. W Hill	T	W	24.8
Peucedanum cervaria	T	R	53.0
Peucedanum cervaria	T	R	35.9
Pfaffia paniculata	T	O	85.9
Phaseolus vulgaris	T	O	35.7
Phytolacca americana	T	S	28.6
Phytolacca decandra syn. P. americana	T	O	31.6
Plectranthus sp.	T	V	66.0
Polygonium chinense	T	S	33.2
Polygonum aviculare linné	T	R	100.0
Populus X petrowskyana	T	O	25.4
Potentilla anserina	T	S	55.8
Poterium sanguisorba	T	W	100.0
Poterium sanguisorba	T	V	82.3
Prunella vulgaris	T	O	52.6
Psoralea corylifolia	T	O	21.3
Psoralea corylifolia	T	S	26.0
Psoralea corylifolia	T	S	27.4

Table 7
Cath G

Nonlath	Stress	Extrat	Inhibition (%)
<i>Peridium aquilinum</i>	T	R	100.0
<i>Punica granatum</i>	T	V	21.3
<i>Punica granatum</i>	T	W	77.1
<i>Punica granatum</i>	T	S	43.9
<i>Radix Rehmannia</i>	T	O	23.9
<i>Raphanus raphanistrum</i>	T	R	36.5
<i>Raphanus raphanistrum</i>	T	R	30.5
<i>Rhamnus frangula</i>	T	R	100.0
<i>Rheum palmatum</i>	T	W	100.0
<i>Rianus communis</i>	T	R	100.0
<i>Rianus communis</i>	T	S	100.0
<i>Rianus communis</i>	T	S	68.2
<i>Ribes Grossularia L.</i>	T	W	61.1
<i>Ribes nidigrolaria</i>	T	W	32.1
<i>Ribes nigrum</i>	T	O	90.2
<i>Ribes nigrum</i>	T	S	20.3
<i>Ribes nigrum L.</i>	T	W	21.1
<i>Ribes nigrum L.</i>	T	W	51.6
<i>Ribes sativam syme</i>	T	W	20.9
<i>Ribes uva-crispa</i>	T	S	41.8
<i>Rosa rugosa</i>	T	S	100.0
<i>Rosa rugosa thumb.</i>	T	W	94.1
<i>Rosmarinum officinalis</i>	T	O	100.0
<i>Rosmarinum officinalis</i>	T	R	40.0
<i>Rosmarinum officinalis</i>	T	V	76.9
<i>Rubus canadensis</i>	T	S	31.3
<i>Rubus canadensis</i>	T	V	22.8
<i>Rubus canadensis</i>	T	W	100.0
<i>Rubus idaeus</i>	T	V	25.0
<i>Rubus idaeus L.</i>	T	S	100.0
<i>Rubus idaeus</i>	T	S	46.1
<i>Rubus idaeus</i>	T	R	32.0
<i>Rubus idaeus</i>	T	O	28.5
<i>Rubus occidentalis</i>	T	R	100.0
<i>Rubus occidentalis</i>	T	O	23.5
<i>Rumex scutatus</i>	T	O	27.1
<i>Rumex acetosella linné</i>	T	O	23.0
<i>Rumex crispus linné</i>	T	R	100.0
<i>Rumex crispus linné</i>	T	R	100.0

Table 7
Cath G

Nom latin	Stress	Extrait	Inhibition (%)
Salvia (elegens)	T	O	100.0
Salvia elegans	T	W	63.5
Salvia officinalis	T	O	34.0
Salvia officinalis	T	R	41.7
Salvia officinalis	T	V	64.3
Salvia officinalis	T	W	100.0
Salvia officinalis	T	R	38.8
Salvia officinalis	T	O	73.4
Salvia officinalis	T	W	95.3
Salvia officinalis	T	V	56.8
Salvia officinalis	T	W	25.1
Salvia sclarea	T	W	28.6
Sambucus canadensis	T	S	40.1
Sambucus canadensis L.	T	O	50.2
Sambucus canadensis	T	S	29.7
Sanguisorba minor	T	W	32.0
Sanguisorba minor	T	W	59.5
Sanguisorba minor	T	S	58.5
Sanguisorba minor	T	S	68.5
Satureja hortensis	T	O	66.5
Satureja hortensis	T	S	20.1
Satureja montana	T	O	43.3
Satureja montana	T	R	36.7
Satureja montana	T	W	100.0
Satureja montana	T	V	81.1
Satureja montana	T	S	40.6
Satureja montana	T	V	54.0
Satureja montana	T	O	90.1
Satureja repandra	T	R	35.8
Satureja repandra	T	W	100.0
Satureja repandra	T	V	75.0
Solanum Tuberosum	T	O	30.9
Solidago canadensis	T	R	91.8
Sonchus oleraceus L.	T	O	45.9
Sorghum dochna Snowdrew	T	O	31.5
Sorghum sudanense	T	O	33.6
Stipa capillata L.	T	O	33.0
Symphytum officinale	T	O	94.1
Symphytum officinale	T	O	42.8

Table 7
Cath G

Non-lat	Stress	Extrat	Inhibition (%)
Tanacetum parthenium	T	W	40.1
Tanacetum parthenium	T	V	33.6
Tanacetum vulgare	T	V	36.5
Tanacetum vulgare	T	W	51.2
Tanacetum vulgare	T	O	95.6
Tanacetum vulgare	T	O	38.4
Tanacetum vulgare	T	R	27.4
Tanacetum vulgare "Goldsticks"	T	V	37.9
Taraxacum officinale	T	V	57.8
Thymus fragantissimus	T	R	34.0
Thymus fragantissimus	T	W	72.7
Thymus fragantissimus	T	V	71.0
Thymus praecox subsp arcticus	T	O	59.2
Thymus pseudolanuginosus	T	O	85.7
Thymus pseudolanuginosus	T	W	20.9
Thymus serpyllum	T	O	94.8
Thymus serpyllum	T	W	38.4
Thymus vulgaris	T	O	100.0
Thymus vulgaris "Argenteus"	T	V	80.4
Thymus X citrodorus	T	O	100.0
Tiarella cordifolia	T	R	100.0
Trichosanthes kirilowii	T	O	100.0
Triticale sp.	T	O	24.4
Tropaeolum majus	T	O	20.6
Ulmus americana	T	O	43.7
Urtica dioica	T	R	28.9
Vaccinium angustifolium	T	S	43.2
Vaccinium angustifolium	T	S	42.4
Vaccinium macrocarpon	T	W	59.2
Vaccinium macrocarpon	T	S	27.2
Vaccinium macrocarpon	T	S	21.6
Vaccinium macrocarpon	T	V	62.6
Veronica officinalis	T	S	52.6
Viburnum trilobum Marsh.	T	R	100.0
Vicia villosa	T	O	36.6
Vitis sp.	T	W	58.9
Vitis sp	T	S	24.7
Vitis sp.	T	S	22.8
Vitis sp.	T	S	21.7

Table 7
Cath G

Zea mays		Nom latin		Stress		Extrait		Inhibition (%)	
				T		S			20.5

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Actinidia arguta	A	R	63.3
Actinidia arguta	A	O	46.3
Achillea millefolium	A	O	32.4
Achillea millefolium	A	R	26.3
Aconitum napellus	A	O	30.0
Acorus calamus	A	R	25.9
Adiantum pedatum	A	O	20.2
Adiantum pedatum	A	R	22.2
Agropyron repens	A	O	98.6
Agropyron repens	A	R	61.8
Alchemilla mollis	A	O ¹	75.7
Alchemilla mollis	A	R	36.5
Allium porrum	A	R	39.7
Allium porrum	A	O	58.2
Allium cepa	A	O	51.0
Allium sativum	A	O	53.8
Allium schoenoprasum	A	O	74.6
Allium Tuberosum	A	O	69.5
Aloe vera	A	R	44.7
Aloe vera	A	O	55.6
Althaea officinalis	A	O	95.0
Althaea officinalis	A	R	33.4
Amaranthus retroflexus	A	R	74.5
Amaranthus retroflexus	A	O	98.4
Anethum graveolens	A	R	37.4
Anethum graveolens	A	O	58.7
Angelica archangelica	A	O	79.1
Apium graveolens	A	R	27.9
Apium graveolens	A	O	46.5
Aralia nudicaulis	A	O	89.3
Aralia nudicaulis	A	R	55.4
Arctium lappa	A	R	32.8
Arctium minus	A	R	72.5
Arctium minus	A	O	61.3
Amoracia rusticana	A	O	95.8
Aronia melanocarpa	A	R	39.8
Aronia melanocarpa	A	O	28.2
Artemisia Absinthium	A	R	51.7
Artemisia Absinthium	A	O	63.7

Table 8
Cath L

Latin name	Stress	Extrait	Inhibition (%)
Artemisia dracunculus	A	O	45.4
Aster sp	A	R	41.8
Aster sp	A	O	91.5
Atropa belladonna	A	O	47.3
Atropa belladonna	A	R	31.7
Cyperus esculentus	A	R	41.3
Cyperus esculentus	A	O	33.8
Beckmannia eruciformis	A	R	40.5
Beckmannia eruciformis	A	O	60.8
Beta vulgaris	A	R	66.1
Beta vulgaris	A	O	79.5
Beta vulgaris spp. Maritima	A	O	63.3
Beta vulgaris spp. Maritima	A	R	59.1
Borago officinalis	A	O	40.9
Brassica napus	A	O	64.6
Brassica napus	A	R	21.1
Brassica oleracea	A	R	66.6
Brassica oleracea	A	O	68.6
Brassica rapa	A	O	99.0
Brassica rapa	A	R	99.3
Campanula rapunculus	A	R	59.0
Campanula rapunculus	A	O	50.6
Canna edulis	A	O	23.9
Capsella bursa-pastoris	A	R	49.0
Capsella bursa-pastoris	A	O	47.0
Capsicum annuum	A	R	29.1
Carum carvi	A	O	60.4
Chaerophyllum bulbosum	A	O	48.6
Chaerophyllum bulbosum	A	R	48.2
Chelidonium majus	A	O	35.5
Chelidonium majus	A	R	23.1
Chenopodium bonus-henricus	A	O	65.9
Chenopodium quinoa	A	R	62.3
Chenopodium quinoa	A	O	90.0
Cicer arietinum	A	O	82.4
Cichorium intybus	A	R	58.0
Cichorium intybus	A	O	81.7
Coix Lacryma-Jobi	A	R	32.6
Coix Lacryma-Jobi	A	O	43.4

Table 8
Cath L

Latin name	Stress	Extraction	Inhibition (%)
Coriandrum sativum	A	R	26.9
Coriandrum sativum	A	O	65.0
Cornus canadensis	A	R	99.7
Cornus canadensis	A	O	60.6
Crataegus sp	A	R	25.9
Crataegus sp	A	O	28.2
Cryptotaenia canadensis	A	O	73.3
Cryptotaenia canadensis	A	R	36.1
Cymbopogon citratus	A	O	32.7
Daucus carota	A	R	63.6
Daucus carota	A	O	43.4
Dirca palustris	A	O	61.1
Dirca palustris	A	R	46.6
Echinacea purpurea	A	O	54.8
Eleusine coracana	A	O	36.4
Fagopyrum esculentum	A	R	37.9
Fagopyrum esculentum	A	O	43.3
Fagopyrum tataricum	A	R	28.4
Fagopyrum tataricum	A	O	32.8
Foeniculum vulgare	A	O	48.8
Fragaria x ananassa	A	R	46.3
Fragaria x ananassa	A	O	78.8
Galinsoga ciliata	A	O	46.0
Galium odoratum	A	R	59.8
Galium odoratum	A	O	79.5
Gaultheria hispidula	A	R	53.4
Gaultheria hispidula	A	O	54.3
Glechoma hederacea	A	O	23.4
Glechoma hederacea	A	R	26.9
Glycine max	A	R	20.5
Glycine max	A	O	73.8
Glycyrrhiza glabra	A	O	57.7
Glycyrrhiza glabra	A	R	53.8
Guizotia abyssinica	A	R	29.6
Guizotia abyssinica	A	O	78.6
Hamamelis virginiana	A	R	41.2
Hedeoma pulegioides	A	O	26.3
Helieborus niger	A	O	36.9
Helieborus niger	A	R	35.4

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Hordeum hexastichon	A	R	31.1
Hyssopus officinalis	A	R	84.8
Hyssopus officinalis	A	O	85.8
Inula helenium	A	O	58.4
Inula helenium	A	R	32.7
Ipomoea Batatas	A	O	29.6
Lathyrus sativus	A	R	31.7
Lathyrus sativus	A	O	71.1
Lathyrus sylvestris	A	R	65.3
Lathyrus sylvestris	A	O	66.4
Laurus nobilis	A	R	43.1
Laurus nobilis	A	O	46.1
Leonurus cardiaca	A	O	63.3
Leonurus cardiaca	A	R	24.5
Levisticum officinale	A	R	20.9
Levisticum officinale	A	O	43.8
Lotus corniculatus	A	R	59.0
Lotus corniculatus	A	O	87.4
Lycopersicon esculentum	A	R	28.0
Malva sylvestris	A	O	23.1
Medicago sativa	A	R	63.8
Medicago sativa	A	O	53.6
Mellilotus albus	A	O	93.7
Mellilotus albus	A	R	80.1
Melissa officinalis	A	R	40.8
Melissa officinalis	A	O	69.5
Mentha piperita	A	R	61.0
Mentha piperita	A	O	73.2
Mentha pulegium	A	O	69.0
Mentha spicata	A	O	94.6
Mentha suaveolens	A	O	55.2
Nepeta cataria	A	R	45.9
Nepeta cataria	A	O	66.3
Nicotiana tabacum	A	R	46.8
Oenothera biennis	A	R	69.8
Oenothera biennis	A	O	47.3
Origanum majorana	A	O	38.5
Origanum vulgare	A	R	43.3
Origanum vulgare	A	O	68.2

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Panax quinquefolius	A	R	41.7
Panax quinquefolius	A	O	83.7
Pastinaca sativa	A	O	62.8
Pastinaca sativa	A	R	44.2
Perilla frutescens	A	O	66.2
Petasites japonicus	A	R	22.6
Petasites japonicus	A	O	25.5
Petroselinum crispum	A	O	79.1
Petroselinum crispum	A	R	32.3
Phalaris canariensis	A	R	45.4
Phaseolus vulgaris	A	R	31.0
Phaseolus vulgaris	A	O	61.8
Pimpinella anisum	A	O	38.1
Plantago major	A	O	95.1
Plectranthus sp.	A	R	76.9
Plectranthus sp.	A	O	58.0
Polygonum aviculare	A	R	28.0
Polygonum aviculare	A	O	49.7
Potentilla anserina	A	R	26.6
Poterium Sanquisorba	A	O	58.0
Pteridium aquilinum	A	R	32.9
Raphanus raphanistrum	A	R	70.7
Raphanus raphanistrum	A	O	83.2
Raphanus sativus	A	R	90.9
Raphanus sativus	A	O	95.4
Rheum rhabarbarum	A	R	26.0
Rheum rhabarbarum	A	O	62.9
Ribes nigrum	A	O	62.9
Ribes Sylvestre	A	R	34.5
Ribes Sylvestre	A	O	80.3
Ricinus communis	A	R	89.9
Ricinus communis	A	O	81.0
Rosa rugosa	A	R	32.9
Rosa rugosa	A	O	35.9
Rosmarinus officinalis	A	O	78.2
Rubus allegheniensis	A	O	76.8
Rubus canadensis	A	R	40.7
Rubus canadensis	A	O	72.6
Rubus idaeus	A	R	35.5

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Rubus idaeus	A	O	97.9
Rumex Acetosa	A	O	32.0
Rumex acetosella	A	R	73.2
Rumex acetosella	A	O	56.9
Rumex crispus	A	R	49.7
Rumex crispus	A	O	37.5
Rumex Scutatus	A	O	53.1
Rumex Scutatus	A	R	25.9
Ruta graveolens	A	O	56.2
Salix purpurea	A	R	71.4
Salix purpurea	A	O	24.7
Salvia elegans	A	O	67.6
Salvia officinalis	A	O	70.5
Salvia officinalis	A	R	56.6
Salvia sclarea	A	O	70.1
Santolina chamaecyparissus	A	R	59.5
Santolina chamaecyparissus	A	O	59.2
Satureja montana	A	O	71.7
Scorzonera hispanica	A	O	21.9
Secale cereale	A	R	33.3
Senecio vulgaris	A	R	47.5
Senecio vulgaris	A	O	20.8
Setaria italica	A	R	48.6
Setaria italica	A	O	37.1
Sium Sisarum	A	O	33.8
Sium Sisarum	A	R	62.5
Solanum tuberosum	A	O	53.6
Solidago sp	A	R	54.0
Solidago sp	A	O	95.1
Sonchus oleraceus	A	R	59.4
Sonchus oleraceus	A	O	69.2
Sorghum dochna	A	R	33.9
Sorghum dochna	A	O	55.3
Sorghum durra	A	R	61.3
Sorghum durra	A	O	83.9
Stachys byzantina	A	R	61.6
Stachys byzantina	A	O	73.8
Stellaria graminea	A	R	40.1
Stellaria graminea	A	O	55.8

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Stellaria media	A	R	70.9
Stellaria media	A	O	51.4
Tanacetum cinerariifolium	A	O	67.7
Tanacetum parthenium	A	R	50.8
Tanacetum parthenium	A	O	81.9
Tanacetum vulgare	A	R	56.2
Tanacetum vulgare	A	O	51.9
Taraxacum officinale	A	O	98.7
Taraxacum officinale	A	R	82.1
Teucrium chamaedrys	A	O	62.2
Thymus praecox subsp arcticus	A	R	42.0
Thymus praecox subsp arcticus	A	O	54.2
Thymus serpyllum	A	O	93.4
Thymus serpyllum	A	R	57.5
Thymus vulgaris	A	R	68.7
Thymus vulgaris	A	O	55.8
Thymus x citriodorus	A	O	72.8
Thymus x citriodorus	A	R	31.9
Tragopogon portifolius	A	O	67.2
Tragopogon portifolius	A	R	37.0
Tropaeolum minus	A	O	62.8
Typha latifolia	A	R	77.5
Typha latifolia	A	O	70.6
Vaccinium Corymbosum	A	O	74.7
Vaccinium Corymbosum	A	R	69.5
Vaccinium macrocarpon	A	R	71.4
Vaccinium macrocarpon	A	O	78.9
Verbascum thapsus	A	O	76.8
Verbascum thapsus	A	R	62.0
Vicia sativa	A	R	79.2
Vicia sativa	A	O	88.7
Vicia villosa	A	O	74.5
Vicia villosa	A	R	61.0
Vinca minor	A	O	46.7
Vinca minor	A	R	31.9
Vitis sp.	A	R	89.5
Vitis sp.	A	O	54.6
Zea mays	A	R	52.0
Zea mays	A	O	93.8

Table 8
Cath L

Latin name	Stress	Extraction	Inhibition (%)
Achillea millefolium	G	O	45.8
Achillea millefolium	G	R	24.6
Aconitum napellus	G	R	28.7
Acorus calamus	G	R	37.5
Acorus calamus	G	O	32.8
Actinidia arguta	G	R	47.8
Actinidia arguta	G	O	78.4
Adiantum pedatum	G	O	45.9
Adiantum pedatum	G	R	27.0
Agropyron repens	G	O	83.0
Agropyron repens	G	R	31.9
Alchemilla mollis	G	O	71.0
Allium ampeloprasum	G	R	36.8
Allium ampeloprasum	G	O	62.2
Allium cepa	G	R	56.1
Allium cepa	G	O	64.4
Allium sativum	G	O	65.2
Allium schoenoprasum	G	O	78.4
Allium tuberosum	G	O	46.6
Aloe vera	G	O	45.7
Athaca officinalis	G	O	50.0
althaea officinalis	G	R	42.2
Amaranthus retroflexus	G	R	41.7
Amaranthus retroflexus	G	O	90.3
Anethum graveolens	G	R	31.3
Anethum graveolens	G	O	60.5
Angelica archangelica	G	O	64.3
Angelica archangelica	G	R	63.3
Apium graveolens	G	O	57.0
Apium graveolens	G	R	28.4
Aralia nudicaulis	G	O	71.8
Aralia nudicaulis	G	R	38.2
Arctium minus	G	R	42.4
Arctium minus	G	O	41.5
Amoracia rusticana	G	O	67.1
Aronia melanocarpa	G	R	32.0
Aronia melanocarpa	G	O	70.0
Artemisia absinthium	G	R	63.1
Artemisia absinthium	G	O	61.1

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Asclepias incarnata	G	R	58.4
Asclepias incarnata	G	O	63.3
Asparagus officinalis	G	R	61.2
Asparagus officinalis	G	O	86.3
Aster Linné	G	O	57.5
Aster sp	G	R	48.7
Aster sp	G	O	94.5
Atropa belladonna	G	R	29.2
Beckmannia eruciformis	G	O	32.9
Beta vulgaris	G	R	47.9
Beta vulgaris	G	O	61.9
Borago officinalis	G	O	51.9
Brassica Napus	G	O	92.1
Brassica napus	G	R	30.2
Brassica oleracea	G	R	79.0
Brassica oleracea	G	O	85.4
Brassica rapa	G	O	81.7
Calamagrostis arundiflora	G	R	59.7
Campanula rapunculus	G	R	65.4
Campanula rapunculus	G	O	54.8
Canna edulis	G	O	30.0
Capsella bursa-pastoris	G	R	48.1
Capsella bursa-pastoris	G	O	50.9
Tropaeolum majus	G	R	22.2
Tropaeolum majus	G	O	59.1
Carum carvi	G	O	62.4
Cerastium tomentosum	G	R	45.1
Chaerophyllum bulbosum	G	O	30.0
Chaerophyllum bulbosum	G	R	54.5
Chelidonium majus	G	O	43.2
Chelidonium majus	G	R	30.7
Chichorium endivia	G	O	64.2
Chichorium endivia subsp endivia	G	R	48.3
Chichorium endivia subsp endivia	G	O	67.0
Cichorium intybus	G	O	78.3
Cichorium intybus	G	R	87.8
Circium arvense	G	R	94.1
Circium arvense	G	O	58.7
Colx Lacryma-Jobi	G	R	35.7

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Colx Lacryma-Jobi	G	O	31.4
Cornus canadensis	G	R	61.3
Cornus canadensis	G	O	80.6
Crataegus submollis	G	R	21.0
Crataegus submollis	G	O	44.4
Cymbopogon citratus	G	R	39.6
Cyperus esculentus	G	R	62.4
Cyperus esculentus	G	O	49.6
Daucus carota	G	O	36.3
Daucus carota	G	R	44.3
Dirca palustris	G	O	85.1
Dirca palustris	G	R	47.1
Echinacea purpurea	G	O	36.4
Eleusine coracana	G	O	65.4
Eleusine coracana	G	R	36.8
Erigeron speciosus	G	R	39.1
Erysimum perofskianum	G	R	58.7
Erysimum perofskianum	G	O	93.1
Fagopyrum esculentum	G	R	36.4
Fagopyrum esculentum	G	O	41.0
Fagopyrum tataricum	G	R	43.3
Fagopyrum tataricum	G	O	29.1
Galinsoga ciliata	G	R	49.8
Galinsoga ciliata	G	O	58.0
Galium odoratum	G	R	65.1
Galium odoratum	G	O	94.2
Gaultheria hispidula	G	R	55.7
Gaultheria hispidula	G	O	50.6
Gaultheria procumbens	G	R	53.3
Gaultheria procumbens	G	O	67.7
Glechoma hederacea	G	O	70.9
Glechoma hederacea	G	R	25.3
Glycine max	G	R	78.6
Glycine max	G	O	85.9
Glycyrrhiza glabra	G	R	59.1
Glycyrrhiza glabra	G	O	60.6
Guizotia abyssinica	G	R	41.8
Guizotia abyssinica	G	O	74.3
Hamamelis virginiana	G	R	44.2

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Helianthus strumosus	G	O	40.6
Helianthus strumosus	G	R	61.4
Helianthus tuberosus	G	O	75.1
Helianthus tuberosus	G	R	30.1
Helichrysum thianschanicum	G	R	56.3
Helichrysum thianschanicum	G	O	84.0
Helieborus niger	G	O	38.8
Helieborus niger	G	R	25.9
Hordeum hexastichon	G	O	62.3
Hordeum hexastichon	G	R	29.4
Hysopos officinalis	G	R	64.7
Hysopos officinalis	G	O	71.9
Inula helenium	G	O	29.4
Inula helenium	G	R	25.7
Ipomoea batatas	G	O	36.9
Lactuca sativa	G	O	70.4
Lactuca sativa	G	R	49.9
Lathyrus sativus	G	O	62.8
Lathyrus sativus	G	R	29.0
Lathyrus sylvestris	G	R	52.1
Lathyrus sylvestris	G	O	52.5
Laurus nobilis	G	R	27.1
Laurus nobilis	G	O	61.0
Lavandula angustifolia	G	R	51.9
Lavandula angustifolia	G	O	57.0
Ledum groenlandicum	G	O	73.4
Ledum groenlandicum	G	R	52.6
Leonurus cardiaca	G	O	88.8
Leonurus cardiaca	G	R	38.5
Levistecum officinale	G	R	51.2
Levistecum officinale	G	O	78.3
Lotus comiculatus	G	O	86.8
Lotus comiculatus	G	R	50.3
Lupinus polyphyllus	G	R	78.9
Lupinus polyphyllus	G	O	66.7
Malus hupehensis	G	R	52.7
Malus hupehensis	G	O	64.1
Malva sylvestris	G	R	26.2
Medicago sativa	G	R	43.4

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Medicago sativa	G	O	92.5
Melilotus albus	G	R	75.5
Melilotus albus	G	O	70.0
Melissa officinalis	G	O	81.1
Mentha piperita	G	O	54.4
Mentha pulegium	G	O	59.4
Mentha spicata	G	R	38.8
Mentha spicata	G	O	83.0
Mentha suaveolens	G	O	56.5
Nepeta cataria	G	O	56.2
Ocimum basilicum	G	O	60.3
Oenothera biennis	G	R	39.2
Oenothera biennis	G	O	44.3
Origanum majorana	G	O	44.7
Origanum vulgare	G	O	58.1
Origanum vulgare	G	R	22.9
Oryza Sativa	G	R	71.8
Oryza Sativa	G	O	39.8
Oxalis Deppei	G	R	80.1
Oxalis Deppei	G	O	28.8
Oxyria digyna	G	R	51.8
Oxyria digyna	G	O	36.2
Panax quinquefolius	G	R	72.1
Panax quinquefolius	G	O	81.6
Panicum miliaceum	G	O	93.4
Passiflora caerulea	G	R	33.2
Passiflora caerulea	G	O	63.2
Pastinaca sativa	G	O	54.0
Pennisetum alopecuroides	G	R	61.0
Petasites japonicus	G	O	50.0
Petroselinum crispum	G	R	49.1
Petroselinum crispum	G	O	52.2
Phalaris canariensis	G	O	72.1
Phaseolus vulgaris	G	R	21.8
Pimpinella anisum	G	O	86.2
Pisum sativum	G	O	61.6
Pisum sativum	G	R	57.5
Plantago major	G	O	91.9
Plectranthus sp.	G	R	53.0

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Plectranthus sp.	G	O	73.0
Polygonum aviculare	G	R	32.2
Polygonum aviculare	G	O	36.4
Portulaca oleracea	G	R	82.1
Portulaca oleracea	G	O	63.3
Potentilla anserina	G	R	26.3
Poterium sanquisorba	G	O	79.9
Prunella vulgaris	G	R	68.8
Prunella vulgaris	G	O	57.4
Raphanus Raphanistrum	G	R	91.9
Raphanus Raphanistrum	G	O	55.2
Rhaphanus sativus	G	R	55.7
Rhaphanus sativus	G	O	78.4
Rheum rhubarbarum	G	R	27.1
Rheum rhubarbarum	G	O	56.8
Ribes nidigrolaria	G	O	70.7
Ribes nigrum	G	R	37.9
Ribes nigrum	G	O	98.9
Ribes Sylvestris	G	R	25.2
Ribes Sylvestris	G	O	65.7
Ricinus communis	G	R	39.3
Ricinus communis	G	O	84.3
Rosmarinus officinalis	G	O	68.6
Rubus idaeus	G	O	26.3
Rumex crispus	G	R	54.2
Rumex crispus	G	O	62.0
Rumex scutatus	G	O	38.1
Ruta graveolens	G	O	85.0
Salix purpurea	G	R	74.7
Salix purpurea	G	O	38.5
Salvia elegans	G	O	54.8
Salvia officinalis	G	R	89.7
Salvia officinalis	G	O	84.9
Salvia sclarea	G	O	61.8
Sambucus ebulus	G	R	48.2
Sambucus ebulus	G	O	98.2
Santolina chamaecyparissus	G	R	61.3
Santolina chamaecyparissus	G	O	88.2
Saponaria officinalis	G	R	52.9

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Saponaria officinalis	G	O	71.8
Satureja hortensis	G	O	44.9
Satureja montana	G	O	76.8
Scorzonera hispanica	G	R	32.9
Scutellaria lateriflora	G	O	49.8
Scutellaria lateriflora	G	R	39.6
Secale cereale	G	R	37.0
Senecio vulgaris	G	R	31.0
Senecio vulgaris	G	O	47.0
Setaria italica	G	R	44.9
Setaria italica	G	O	42.0
Silene vulgaris	G	R	76.8
Silene vulgaris	G	O	92.2
Sium sisarum	G	O	58.9
Sium sisarum	G	R	66.6
solanum melongena	G	R	66.8
Solanum tuberosum	G	O	47.4
Solidago sp	G	R	53.6
Solidago sp	G	O	88.3
Sonchus oleraceus	G	R	62.5
Sonchus oleraceus	G	O	55.5
Sorghum dochna	G	R	67.4
Sorghum dochna	G	O	73.7
sorghum durra	G	R	24.8
sorghum durra	G	O	42.3
Sorghum sudanense	G	R	35.5
Sorghum sudanense	G	O	66.3
Stachys byzantina	G	R	75.5
Stachys byzantina	G	O	66.7
Stellaria graminea	G	R	36.9
Stellaria graminea	G	O	40.1
Stellaria media	G	R	31.2
Stellaria media	G	O	51.1
Symphytum officinale	G	R	90.2
Symphytum officinale	G	O	90.8
Tanacetum cinerariifolium	G	O	76.1
Tanacetum parthenium	G	R	70.1
Tanacetum parthenium	G	O	62.4
Tanacetum vulgare	G	R	36.2

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Tanacetum vulgare	G	O	72.5
Taraxacum officinale	G	O	100.0
Taraxacum officinale	G	R	78.6
Teucrium chamaedrys	G	O	50.5
Teucrium chamaedrys	G	R	40.1
Thymus fragrantissimus	G	R	81.4
Thymus fragrantissimus	G	O	58.4
Thymus praecox subsp arcticus	G	R	49.2
Thymus praecox subsp arcticus	G	O	62.4
Thymus serpyllum	G	O	70.4
Thymus serpyllum	G	R	54.9
Thymus vulgaris	G	R	55.1
Thymus x citriodorus	G	O	47.1
Tiarella cordifolia	G	O	52.8
Typha latifolia	G	R	65.1
Typha latifolia	G	O	46.9
Vaccinium corymbosum	G	O	54.5
Vaccinium corymbosum	G	R	82.9
Vaccinium angustifolium	G	R	27.9
Vaccinium angustifolium	G	O	66.8
Vaccinium macrocarpon	G	R	40.7
Vaccinium macrocarpon	G	O	76.7
Veratrum viride	G	O	35.4
Verbascum thapsus	G	O	72.9
Verbascum thapsus	G	R	60.5
Viburnum trilobum	G	R	52.6
Vicia sativa	G	R	36.6
Vicia sativa	G	O	83.2
Vicia villosa	G	O	77.3
Vicia villosa	G	R	46.8
Vinca minor	G	O	63.0
Vinca minor	G	R	30.8
Vitis sp.	G	R	52.7
Vitis sp.	G	O	99.2
Zea mays	G	R	45.1
Zea mays	G	O	55.3
Penilla frutescens	T	R	68.0
Penilla frutescens	T	O	74.4
Achillea millefolium	T	O	46.0

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Achillea millefolium	T	R	32.9
Aconitum napellus	T	O	35.2
Aconitum napellus	T	R	31.9
Acorus calamus	T	O	40.6
Acorus calamus	T	R	26.9
Actinidia arguta	T	R	80.0
Actinidia arguta	T	O	66.3
Adiantum pedatum	T	O	43.4
Agrimonia eupatoria	T	O	37.5
Agropyron repens	T	O	75.0
Agropyron repens	T	R	50.0
Alchemilla mollis	T	O	71.6
Alchemilla mollis	T	R	81.1
Alium ampeloprasum	T	O	84.4
Alium cepa	T	O	49.2
Alium cepa	T	R	30.1
Alium sativum	T	O	63.8
Alium schoenoprasum	T	O	79.6
Alium tuberosum	T	O	55.8
Alium tuberosum	T	R	29.6
Aloe vera	T	R	30.3
Aloe vera	T	O	42.7
Althaea officinalis	T	R	42.5
Althaea officinalis	T	O	46.3
Amaranthus candatus	T	R	37.3
Amaranthus candatus	T	O	60.0
Amaranthus retroflexus	T	R	33.2
Amaranthus retroflexus	T	O	94.3
angelica archangelica	T	O	37.4
angelica archangelica	T	R	55.7
Anthriscus cerefolium	T	O	86.5
Anthriscus cerefolium	T	R	69.6
Apium graveolens	T	R	22.0
Aralia nudicaulis	T	O	77.5
Aralia nudicaulis	T	R	28.4
Arctium minus	T	R	54.4
Arctium minus	T	O	89.5
Amoracia rusticana	T	O	84.9
Aronia melanocarpa	T	R	61.9

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Aronia melanocarpa	T	O	84.5
Artemisia absinthium	T	R	29.0
Artemisia absinthium	T	O	55.9
Artemisia dracunculoides	T	O	96.7
Artium lappa	T	O	26.0
Asclepias incarnata	T	R	58.5
Asclepias incarnata	T	O	66.8
Aster spp	T	R	40.5
Aster spp	T	O	86.7
Atropa belladonna	T	O	61.4
Atropa belladonna	T	R	30.4
Avena sativa	T	R	38.0
Cyperus esculentus	T	O	47.6
Cyperus esculentus	T	R	49.5
Beta vulgaris	T	O	62.2
Borago officinalis	T	O	39.1
Brassica Napus	T	O	89.3
Brassica nigra	T	R	26.9
Brassica oleracea	T	O	63.9
Brassica oleracea	T	R	76.2
Brassica oleracea	T	O	69.9
Bromus inermis	T	R	79.8
Bromus inermis	T	O	88.1
Calamagrostis arundinacea	T	R	62.8
Calendula officinalis	T	R	64.6
Canna edulis	T	O	47.5
Capsella bursa-pastoris	T	R	48.7
Capsella bursa-pastoris	T	O	40.9
Carex morrowii	T	R	45.7
Carex morrowii	T	O	70.3
Carum carvi	T	R	22.7
Cerastium tomentosum	T	R	46.8
Chaerophyllum bulbosum	T	R	22.9
Chaerophyllum bulbosum	T	O	40.9
Chelidonium majus	T	O	60.7
Chelidonium majus	T	R	24.0
Chenopodium quinoa	T	R	41.5
Chenopodium quinoa	T	O	86.7
Cicer arietinum	T	R	20.4

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Cicer arietinum	T	O	84.2
Cichorium endivia	T	O	76.3
Cichorium intybus	T	O	81.7
Cichorium intybus	T	R	73.3
Cicium arvense	T	R	50.0
Cicium arvense	T	O	74.8
Citullus colocynthus	T	O	62.5
Citullus colocynthis	T	R	57.3
Colx Lacryma-Jobi	T	R	33.7
Coriandrum sativum	T	O	59.2
Coriandrum sativum	T	R	37.1
Cornus canadensis	T	R	82.6
Cornus canadensis	T	O	47.7
Crataegus sp	T	O	33.9
Crataegus submollis	T	O	64.3
Cryptotaenia canadensis	T	O	60.9
Cryptotaenia canadensis	T	R	41.5
Cymbopogon citratus	T	R	65.2
Cymbopogon citratus	T	O	65.6
Daucus carota	T	R	27.5
Dioscorea batatas	T	O	42.3
Dirca palustris	T	O	57.4
Dirca palustris	T	R	29.5
Echinacea purpurea	T	O	83.0
Eleusine coracana	T	O	70.3
Erysimum perofskianum	T	R	90.4
Erysimum perofskianum	T	O	92.2
Fagopyrum esculentum	T	R	61.6
Fagopyrum esculentum	T	O	39.0
Fagopyrum tataricum	T	R	36.7
Fagopyrum tataricum	T	O	25.6
Foeniculum vulgare	T	O	79.0
Fragaria x ananassa	T	O	26.0
Galinsoga ciliata	T	R	34.6
Galinsoga ciliata	T	O	60.3
Galium odoratum	T	R	98.8
Galium odoratum	T	O	96.1
Gautheria hispidula	T	O	33.1
Gautheria procumbens	T	O	84.2

Table 8
Cath L

Lath name	Stress	Extract	Inhibition (%)
Glechoma hederacea	T	O	70.1
Glechoma hederacea	T	R	38.5
Glycine max	T	O	54.8
Glycine max	T	R	38.0
Glycine max	T	O	88.7
Glycyrrhiza glabra	T	O	65.5
Glycyrrhiza glabra	T	R	40.5
Guizotia abyssinica	T	R	48.1
Guizotia abyssinica	T	O	84.1
Hamamelis virginiana	T	R	35.9
Hedeoma pulegioides	T	R	24.8
Helianthus strumosus	T	O	32.9
Helianthus strumosus	T	R	31.0
Helianthus tuberosus	T	R	42.8
Helianthus tuberosus	T	O	72.1
Helichrysum angustifolium	T	R	69.6
Helichrysum angustifolium	T	O	84.9
Helichrysum thianschanicum	T	R	96.2
Helichrysum thianschanicum	T	O	80.7
Humulus lupulus	T	O	71.3
Humulus lupulus	T	R	60.6
Hyoscyamus niger	T	O	68.0
Hyssopus officinalis	T	R	73.3
Hyssopus officinalis	T	O	76.9
Inula helenium	T	O	93.3
Inula helenium	T	R	63.5
Ipomoea batatas	T	O	99.9
Juniperus communis	T	R	26.9
Kochia scoparia.	T	O	76.7
Koeleria glauca	T	R	89.1
Koeleria glauca	T	O	67.7
Lactuca sativa	T	O	75.2
Lactuca sativa	T	R	55.3
Lathyrus Sativus	T	R	23.3
Lathyrus Sativus	T	O	70.6
Lathyrus sylvestris	T	R	77.1
Lathyrus sylvestris	T	O	53.0
Laurus nobilis	T	R	61.6
Laurus nobilis	T	O	92.7

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Lavandula angustifolia	T	R	54.1
Lavandula angustifolia	T	O	84.4
Lavandula latifolia	T	R	55.4
Lavandula latifolia	T	O	82.9
Ledum groenlandicum	T	O	96.1
Ledum groenlandicum	T	R	74.0
Lens culinaris subsp culinaris	T	R	36.4
Lens culinaris subsp culinaris	T	O	100.0
Levisticum officinale	T	R	38.8
Levisticum officinale	T	O	73.4
Lotus corniculatus	T	O	81.6
Lotus corniculatus	T	R	52.0
Lupinus polyphyllus	T	R	53.3
Lupinus polyphyllus	T	O	64.4
Luzula sylvatica	T	R	62.6
Malus	T	O	70.9
Malus hupehensis	T	R	77.6
Malus hupehensis	T	O	72.4
Medicago sativa	T	R	41.0
Medicago sativa	T	O	94.1
Melilotus officinalis	T	R	44.0
Melilotus officinalis	T	O	90.8
Mentha piperita	T	O	20.6
Menyanthes trifoliata	T	R	20.8
Miscanthus sinensis	T	R	89.0
Miscanthus sinensis	T	O	73.7
Nepeta cataria	T	R	25.3
Ocimum Basilicum	T	O	65.7
Oenothera biennis	T	R	40.2
Oenothera biennis	T	O	49.2
Onobrychis viciifolia	T	R	53.2
Onobrychis viciifolia	T	O	49.2
Origanum vulgare	T	R	50.6
Origanum vulgare	T	O	45.1
Oryza sativa	T	R	40.3
Oryza sativa	T	O	28.6
Oxalis Deppei	T	R	35.2
Oxalis Deppei	T	O	42.1
oxyria digyna	T	R	42.8

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
oxyria digyna	T	O	52.3
Panax quinquefolius	T	O	78.8
Panicum miliaceum	T	R	52.6
Passiflora caerulea	T	O	77.5
Pastinaca sativa	T	R	52.0
Pastinaca sativa	T	O	31.8
Pennisetum alopecuroides	T	O	73.4
Pertoselinum crispum	T	R	65.2
Petasites Japonicus	T	R	31.3
Petasites Japonicus	T	O	24.6
Pertoselinum crispum	T	O	45.2
Phalaris canariensis	T	R	33.6
Phalaris canariensis	T	O	86.5
Phaseolus vulgaris	T	O	57.0
Physalis pruinosa	T	O	58.2
Pimpinella anisum	T	O	95.9
Pimpinella anisum	T	R	91.7
Pisum sativum	T	R	30.5
Pisum sativum	T	O	69.3
Plantago major	T	O	93.8
Plantago major	T	R	20.2
Plectranthus sp.	T	R	44.4
Plectranthus sp.	T	O	50.8
Polygonum aviculare	T	R	47.9
Polygonum aviculare	T	O	72.7
Potentilla anserina	T	R	21.8
Prunella vulgaris	T	R	84.3
Prunella vulgaris	T	O	56.7
Pteridium aquilinum	T	R	32.6
Raphanus raphanistrum	T	R	68.6
Raphanus raphanistrum	T	O	77.0
Raphanus sativus	T	R	41.0
Raphanus sativus	T	O	63.1
Frangula alnus	T	O	27.0
Frangula alnus	T	R	45.3
Ricinus communis	T	R	22.4
Ricinus communis	T	O	72.0
Ribes nigrum	T	R	50.5
Ribes nigrum	T	O	70.1

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Ribes Sylvestre	T	O	87.9
Ribes Sylvestre	T	R	40.2
Ribes Sylvestre	T	O	45.2
Rosmarinus officinalis	T	O	69.6
Rubus canadensis	T	R	37.2
Rubus canadensis	T	O	57.9
Rubus idaeus	T	R	64.9
Rubus idaeus	T	O	94.9
Rumex scutatus	T	O	74.9
Rumex scutatus	T	R	20.7
Rumex acetosella	T	R	40.1
Rumex acetosella	T	O	42.0
Rumex crispus	T	R	40.7
Rumex crispus	T	O	51.2
Ruta graveolens	T	O	91.2
Salix purpurea	T	R	55.5
Salix purpurea	T	O	51.2
Salvia officinalis	T	R	64.7
Salvia officinalis	T	O	66.6
Sambucus canadensis	T	O	92.5
Sambucus canadensis	T	R	64.0
Sanguisorba minor	T	O	68.4
Santolina chamaecyparissus	T	R	84.4
Santolina chamaecyparissus	T	O	33.9
Saponaria officinalis	T	R	59.3
Saponaria officinalis	T	O	80.4
Satureja hortensis	T	O	26.5
Satureja hortensis	T	R	23.0
Satureja montana	T	R	57.2
Satureja montana	T	O	43.5
Satureja repandra	T	R	47.1
Satureja repandra	T	O	66.3
Scutellaria lateriflora	T	O	20.3
Scutellaria lateriflora	T	R	33.8
Secale cereale	T	R	28.5
Senecio vulgaris	T	R	34.0
Setaria italica	T	R	40.7
Silene vulgaris	T	R	66.3
Silene vulgaris	T	O	99.7

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
<i>Sium sisanum</i>	T	O	90.7
<i>Sium sisanum</i>	T	R	39.6
<i>Solidago sp</i>	T	R	44.3
<i>Solidago sp</i>	T	O	73.6
<i>Sonchus oleraceus</i>	T	R	53.7
<i>Sonchus oleraceus</i>	T	O	36.9
<i>Sorghum cafferum</i>	T	R	96.4
<i>Sorghum cafferum</i>	T	O	80.1
<i>Sorghum dochna</i>	T	R	95.3
<i>Sorghum dochna</i>	T	O	70.3
<i>Sorghum dochna</i>	T	R	98.5
<i>Sorghum dochna</i>	T	O	85.3
<i>Sorghum durra</i>	T	R	86.5
<i>Sorghum durra</i>	T	O	81.7
<i>Sorghum sudanense</i>	T	R	34.7
<i>Stachys affinis</i>	T	O	75.7
<i>Stachys affinis</i>	T	R	33.5
<i>Stachys byzantina</i>	T	R	60.8
<i>Stachys byzantina</i>	T	O	77.5
<i>Stellaria graminea</i>	T	R	37.5
<i>Stellaria graminea</i>	T	O	54.7
<i>Stellaria media</i>	T	R	26.0
<i>Stellaria media</i>	T	O	49.0
<i>Stipa capillata</i>	T	R	43.4
<i>Symphytum officinale</i>	T	R	55.1
<i>Symphytum officinale</i>	T	O	64.0
<i>Tanacetum cinerariifolium</i>	T	O	65.5
<i>Tanacetum parthenium</i>	T	R	45.2
<i>Tanacetum parthenium</i>	T	O	54.7
<i>Tanacetum vulgare</i>	T	R	59.8
<i>Tanacetum vulgare</i>	T	O	86.0
<i>Taraxacum officinale</i>	T	O	100.0
<i>Taraxacum officinale</i>	T	R	91.3
<i>Teucrium chamaedrys</i>	T	O	60.8
<i>Teucrium chamaedrys</i> L.	T	R	69.2
<i>Thymus fragrantissimus</i>	T	R	97.8
<i>Thymus fragrantissimus</i>	T	O	81.7
<i>Thymus praecox subsp arcticus</i>	T	R	36.1
<i>Thymus praecox subsp arcticus</i>	T	O	31.8

Table 8
Cath L

Latin name	Stress	Extract	Inhibition (%)
Thymus pseudolanuginosus	T	R	33.9
Thymus pseudolanuginosus	T	O	43.7
Thymus serpyllum	T	R	39.2
Thymus serpyllum	T	O	68.6
Thymus X citriodorus	T	O	70.9
Thymus X citriodorus	T	R	46.1
Tiarella cordifolia	T	O	72.0
Tragopogon portifolius	T	O	40.9
Tragopogon portifolius	T	R	20.5
Triticosecala spp.	T	O	38.2
Triticum aestivum	T	R	31.4
Triticum aestivum	T	O	33.8
Tropaeolum majus	T	R	29.2
Tropaeolum majus	T	O	20.9
Typha latifolia	T	R	67.0
Typha latifolia	T	O	56.0
Urtica dioica	T	R	77.8
Urtica dioica	T	O	75.6
Vaccinium angustifolium	T	O	58.6
Vaccinium macrocarpon	T	R	20.1
Vaccinium macrocarpon	T	O	41.7
Veratrum viride	T	O	57.1
Veratrum viride	T	R	26.6
Verbascum thapsus	T	O	72.8
Verbascum thapsus	T	R	56.0
Viburnum trilobum	T	R	49.5
Viburnum trilobum	T	O	56.8
Vicia sativa	T	O	73.9
Vicia villosa	T	R	79.2
Vicia villosa	T	O	70.9
Vinca minor	T	O	21.5
Vitis sp.	T	R	79.7
Vitis sp.	T	O	97.4
Zea mays	T	R	83.5
Zea mays	T	O	58.2

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Achillea millefolium	A	O	21.9
	Achillea millefolium	A	S	24.5
	Aconitum napellus	A	O	25.8
	Adiantum pedatum	A	R	27.6
	Agrimonia eupatoria	A	V	26.0
	Agropyron cristatum	A	R	21.0
	Agropyron repens	A	S	23.4
	Agropyron repens	A	R	28.2
	Agropyron repens	A	S	39.8
	Agrostis Stolonifera	A	O	38.9
	Alchemilla mollis	A	V	27.9
	Alchemilla mollis	A	O	66.0
	Alchemilla mollis	A	R	100.0
	Alchemilla mollis	A	S	23.5
	Alkanna tinctoria	A	S	26.2
	Allium Tuberosum	A	S	57.9
	Aloe vera	A	O	20.5
	Ambrosia artemisiifolia	A	O	29.1
	Amelanchier sanguinea	A	W	96.5
	Amelanchier sanguinea	A	V	52.4
	Anethum graveolens	A	O	32.1
	Anethum graveolens	A	W	22.8
	Angelica archangelica	A	S	39.2
	Anthemis nobilis	A	O	37.6
	Anthemis nobilis	A	S	26.4
	Anthemis tinctoria	A	O	31.9
	Anthemis tinctoria	A	S	38.4
	Apium graveolens	A	S	49.2
	Arctium minus	A	O	46.4
	Arctostaphylos uva-ursi	A	R	100.0
	Aronia melanocarpa	A	O	21.9
	Aronia melanocarpa	A	W	78.4
	Aronia melanocarpa	A	V	100.0
	Aronia melanocarpa	A	R	29.0
	Aronia melanocarpa	A	O	33.6
	Artemisia dracunculul	A	W	89.2
	Ludoviciana	A	O	33.4
	Ludoviciana	A	S	20.7
	Aster sp	A	R	26.2

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Beta vulgaris	A	R	100.0
	Beta vulgaris spp. Maritima	A	R	92.2
	Borago officinalis	A	S	22.6
	Brassica napus	A	S	68.3
	Brassica napus	A	R	29.5
	Brassica nigra	A	S	32.6
	Brassica oleracea	A	O	22.9
	Brassica oleracea	A	V	20.8
	Brassica oleracea	A	R	22.2
	Brassica rapa	A	S	23.2
	Brassica rapa	A	R	26.9
	Bromus inermis	A	O	34.1
	Bromus inermis	A	R	21.9
	Calamintha nepeta	A	O	35.4
	Canna edulis	A	O	56.4
	Canna edulis	A	R	21.4
	Canum carvi	A	O	24.2
	Chaerophyllum bulbosum	A	O	25.5
	chenopodium bonus-henricus	A	R	24.0
	Chenopodium bonus-henricus	A	S	85.8
	Chenopodium quinoa	A	S	50.4
	Chrysanthemum coronarium	A	O	26.0
	Cicer arietinum	A	S	23.3
	Cichorium intybus	A	S	32.1
	Citrullus lanatus	A	R	26.3
	Coix Lacryma-Jobi	A	S	66.1
	Cosmos sulphureus	A	O	38.8
	Cosmos sulphureus	A	S	20.7
	Crataegus sp	A	O	84.1
	Crataegus sp	A	R	23.6
	Crataegus sp	A	S	21.7
	Crataegus submolis	A	S	34.0
	Cryptotaenia canadensis	A	V	22.1
	Cucumis anguria	A	O	26.2
	Cucumis Anguria	A	R	53.4
	Cucumis melo	A	S	53.6
	Cucumis sativus	A	R	53.3
	Curcuma zedoaria	A	O	24.3
	Cymbopogon citratus	A	S	91.2

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Datisca cannabina	A	S	55.7
	Daucus carota	A	R	100.0
	Daucus carota	A	V	24.7
	Daucus carota	A	O	37.9
	Digitalis purpurea	A	S	34.0
	Dirca palustris	A	R	20.3
	Dirca palustris	A	S	27.9
	Dolichos Lablab	A	R	21.5
	Dryopteris filix-mas	A	R	58.8
	Dryopteris filix-mas	A	S	22.0
	Echinacea purpurea	A	O	38.2
	Echinacea purpurea	A	S	28.1
	Eleusine coracana	A	S	20.7
	Erigeron canadensis	A	O	29.6
	Fagopyrum esculentum	A	S	29.3
	Fagopyrum tataricum	A	S	24.4
	Foeniculum vulgare	A	O	25.1
	Fragaria Xananassa	A	O	22.3
	Fragaria Xananassa	A	W	100.0
	Fragaria Xananassa	A	V	21.4
	Fragaria Xananassa	A	S	29.4
	Fragaria Xananassa	A	V	21.6
	Galinsoga ciliata	A	R	61.6
	Galium odoratum	A	R	21.0
	Gaultheria hispidula	A	O	33.7
	Gentiana lutea	A	R	52.1
	Glechoma hederacea	A	O	21.8
	Glycine Max	A	S	81.3
	Glycyrrhiza glabra	A	W	100.0
	Glycyrrhiza glabra	A	S	63.3
	Guizotia abyssinica	A	R	36.9
	Hamamelis virginiana	A	R	100.0
	Helianthus Tuberosus	A	S	32.1
	Heliotropium arborescens	A	R	22.8
	Heliotropium arborescens	A	S	24.9
	Helleborus niger	A	S	25.6
	Hordeum vulgare	A	O	58.1
	Hypericum perforatum	A	S	24.8
	Hyssopus officinalis	A	O	21.1

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Hyssopus officinalis</i>	A	S	93.6
	<i>Lactuca serriola</i>	A	S	34.3
	<i>Laurus nobilis</i>	A	W	100.0
	<i>Lavandula latifolia</i>	A	W	57.1
	<i>Lavandula latifolia</i>	A	O	43.7
	<i>Lavandula latifolia</i>	A	S	42.2
	<i>Leonurus cardiaca</i>	A	R	100.0
	<i>Lepidium sativum</i>	A	O	100.0
	<i>Lolium multiflorum</i>	A	O	31.0
	<i>Lolium perenne</i>	A	O	20.8
	<i>Lolium perenne</i>	A	R	21.7
	<i>Lolium perenne</i>	A	S	22.1
	<i>Malva sylvestris</i>	A	S	22.9
	<i>Matricaria recutita</i>	A	O	28.5
	<i>Melaleuca alternifolia</i>	A	O	21.9
	<i>Melissa officinalis</i>	A	S	23.4
	<i>Mentha piperita</i>	A	O	31.6
	<i>Mentha piperita</i>	A	W	33.2
	<i>Mentha pulegium</i>	A	O	42.2
	<i>Mentha pulegium</i>	A	V	21.5
	<i>Mentha pulegium</i>	A	S	33.8
	<i>Mentha spicata</i>	A	O	24.3
	<i>Oenothera biennis</i>	A	O	25.2
	<i>Oenothera biennis</i>	A	R	78.8
	<i>Origanum majorana</i>	A	V	37.4
	<i>Oxyria digyna</i>	A	V	28.2
	<i>Panicum miliaceum</i>	A	O	33.3
	<i>Peucedanum cervaria</i>	A	R	23.4
	<i>Phalaris arundinacea</i>	A	R	22.4
	<i>Phalaris canariensis</i>	A	O	27.8
	<i>Phaseolus coccineus</i>	A	S	28.3
	<i>Phaseolus mungo</i>	A	R	37.8
	<i>Phaseolus vulgaris</i>	A	O	24.3
	<i>Phaseolus vulgaris</i>	A	S	74.3
	<i>Phleum pratense</i>	A	R	27.8
	<i>Physalis ixocarpa</i>	A	O	21.5
	<i>Physalis ixocarpa</i>	A	S	26.5
	<i>Physalis Pruinosa</i>	A	S	60.2
	<i>Phytolacca americana</i>	A	S	100.0

Table 9
HLE

Latin name	Stress	Extract	Inhibition (%)
Plantago coronopus	A	O	21.1
Plantago coronopus	A	S	25.7
Plantago major	A	O	26.0
Plectranthus sp.	A	O	23.1
Poa pratensis	A	O	21.7
Polygonum aviculare	A	R	79.7
Portulaca oleycae	A	O	34.5
Potentium sanguisorba	A	R	25.8
Potentium sanguisorba	A	O	34.6
Potentium sanguisorba	A	W	31.0
Pteridium aquilinum	A	R	54.4
Raphanus sativus	A	S	66.4
Raphanus sativus	A	R	81.8
Rheum officinale	A	S	37.9
Ribes nigrum	A	W	100.0
Ribes nigrum	A	S	47.6
Ribes nigrum	A	V	27.5
Ribes rubrum	A	R	35.4
Ribes Sylvestre	A	W	100.0
Rosa rugosa	A	W	95.1
Rosa rugosa	A	R	24.6
Rosmarinus officinalis	A	R	58.4
Rubus idaeus	A	W	27.6
Rubus idaeus	A	S	33.0
Rubus idaeus	A	R	27.9
Rubus idaeus	A	O	37.4
Rumex Acetosa	A	S	45.2
Rumex crispus	A	O	26.1
Rumex crispus	A	R	100.0
Rumex Scutatus	A	V	43.8
Ruta graveolens	A	O	28.7
Sacharum officinarum	A	O	29.6
Sacharum officinarum	A	R	23.8
Salvia elegans	A	O	100.0
Salvia officinalis	A	O	95.7
Salvia officinalis	A	W	77.9
Salvia officinalis	A	R	83.7
Salvia officinalis	A	S	20.5
Salvia sclarea	A	O	100.0

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Salvia sclarea	A	V	28.6
	Santolina chamaecyparissus	A	O	27.1
	Satureja montana	A	W	23.2
	Satureja montana	A	S	27.7
	Scorzonera hispanica	A	R	60.1
	Scutellaria lateriflora	A	S	45.9
	Senecio vulgaris	A	R	34.0
	Sonchus oleraceus	A	O	29.1
	Sorghum dochna	A	O	21.1
	Sorghum dochna	A	V	24.4
	Sorghum durra	A	O	23.4
	Sorghum durra	A	V	23.6
	Spinacia oleracea	A	S	26.8
	Stellaria graminea	A	O	24.8
	Symphytum officinale	A	O	91.6
	Tanacetum cinerariifolium	A	R	28.3
	Tanacetum vulgare	A	O	46.3
	Tanacetum vulgare	A	S	33.7
	Taraxacum officinale	A	W	26.4
	Taraxacum officinale	A	V	24.0
	Taraxacum officinale	A	O	21.0
	Teucrium chamaedrys	A	O	37.0
	Thymus fragrantissimus	A	W	20.2
	Thymus herba-barona	A	W	20.8
	Thymus vulgaris	A	R	77.9
	Thymus vulgaris	A	W	23.6
	Thymus x citriodorus	A	W	21.3
	Thymus x citriodorus	A	S	21.1
	Trichosanthes kirilowii	A	O	23.2
	Trigonella foenum graecum	A	S	32.0
	Triticum durum	A	S	22.0
	Triticum turgidum	A	O	60.0
	Triticum spelta	A	S	47.6
	Urtica dioica	A	O	33.3
	Vaccinium angustifolium	A	W	42.6
	Vaccinium Corymbosum	A	W	22.4
	Vaccinium Corymbosum	A	S	21.6
	Vaccinium macrocarpon	A	W	22.5
	Vaccinium macrocarpon	A	S	54.8

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Valeriana locusta	A	O	49.2
	Veronica officinalis	A	O	43.7
	Viburnum trilobum Marsh.	A	W	75.4
	Vitis	A	S	33.8
	Vitis	A	W	100.0
	Vitis	A	O	21.0
	Zea Mays	A	S	95.2
	Achillea millefolium	G	O	28.8
	Achillea millefolium	G	S	27.3
	Aconitum napellus	G	O	23.1
	Aconitum napellus	G	R	97.7
	Acorus calamus	G	S	20.0
	Adiantum pedatum	G	R	100.0
	Agastache foeniculum	G	W	25.3
	Ageratum conyzoides	G	O	28.5
	Agropyron cristatum	G	R	37.3
	Agropyron repens	G	R	31.4
	Alchemilla mollis	G	W	20.6
	Alchemilla mollis	G	O	56.1
	Alchemilla mollis	G	R	28.1
	Alchemilla mollis	G	S	25.3
	Allium cepa	G	O	20.2
	Allium sativum	G	O	100.0
	Allium tuberosum	G	O	100.0
	Althaea officinalis	G	S	30.8
	Amaranthus caudatus	G	S	22.3
	Amelanchier sanguinea	G	W	88.3
	Anethum graveolens	G	O	26.2
	Angelica archangelica	G	S	43.2
	Anthemis nobilis	G	S	21.7
	Arctostaphylos uva-ursi	G	O	33.1
	Arctostaphylos uva-ursi	G	R	100.0
	Arctostaphylos uva-ursi	G	S	23.4
	Arnica montana	G	O	22.5
	Aronia melanocarpa	G	W	79.0
	Aronia melanocarpa	G	V	100.0
	Aronia melanocarpa	G	S	22.7
	Aronia melanocarpa	G	O	29.6
	Artemisia absinthium	G	O	31.5

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Artemisia absinthium</i>	G	V	24.2
	<i>Aster</i>	G	S	29.2
	<i>Beckmannia eruciformis</i>	G	O	22.7
	<i>Beta vulgaris</i>	G	R	100.0
	<i>Betula glandulosa</i>	G	S	26.7
	<i>Borago officinalis</i>	G	O	25.7
	<i>Brassica Napus</i>	G	S	50.4
	<i>Brassica napus</i>	G	R	48.2
	<i>Brassica nigra</i>	G	S	23.9
	<i>Brassica oleracea</i>	G	R	28.1
	<i>Brassica oleracea</i>	G	S	22.5
	<i>Brassica rapa</i>	G	R	56.4
	<i>Calamintha nepeta</i>	G	V	24.8
	<i>Calamintha nepeta</i>	G	O	38.8
	<i>Canna edulis</i>	G	O	66.3
	<i>Capsella bursa-pastoris</i>	G	R	25.8
	<i>Carthamus tinctorius</i>	G	R	22.2
	<i>Chelidonium majus</i>	G	O	31.6
	<i>Chenopodium album</i>	G	S	21.3
	<i>Cichorium endivia subsp. Endivia</i>	G	S	21.4
	<i>Cicer arietinum</i>	G	S	50.7
	<i>Cichorium endivia subsp. Endivia</i>	G	O	48.5
	<i>Cichorium endivia subsp. Endivia</i>	G	S	27.9
	<i>Coix Lacryma-Jobi</i>	G	O	24.5
	<i>Cornus canadensis</i>	G	S	36.1
	<i>Crataegus sp</i>	G	W	57.8
	<i>Cucurbita Pepo</i>	G	R	23.1
	<i>Curcuma zedoaria</i>	G	O	24.0
	<i>Datura metel</i>	G	O	21.0
	<i>Daucus carota</i>	G	O	32.3
	<i>Daucus carota</i>	G	R	90.9
	<i>Dipsacus sativus</i>	G	O	32.7
	<i>Dirca palustris</i>	G	S	33.5
	<i>Dolichos Lablab</i>	G	R	32.1
	<i>Dryopteris filix-mas</i>	G	R	80.9
	<i>Echinacea purpurea</i>	G	S	63.0
	<i>Elymus junceus</i>	G	R	25.9
	<i>Erigeron canadensis</i>	G	O	43.0
	<i>Erigeron speciosus</i>	G	O	22.8

Table 9
HLE

Latin name	Stress	Extract	Inhibition (%)
<i>Erigeron speciosus</i>	G	S	24.2
<i>Erysimum perofskianum</i>	G	O	20.8
<i>Fagopyrum esculentum</i>	G	S	32.9
<i>Fagopyrum tataricum</i>	G	S	41.2
<i>Foeniculum vulgare</i>	G	V	25.7
<i>Foeniculum vulgare</i>	G	S	42.5
<i>Foeniculum Vulgare</i>	G	O	24.1
<i>Galinoga ciliata</i>	G	S	25.0
<i>Galium odoratum</i>	G	R	89.4
<i>Gautheria hispidula</i>	G	O	35.1
<i>Gautheria hispidula</i>	G	R	67.2
<i>Gautheria procumbens</i>	G	S	74.7
<i>Glycine max</i>	G	R	24.6
<i>Glycyrrhiza glabra</i>	G	W	56.8
<i>Glycyrrhiza glabra</i>	G	V	30.0
<i>Glycyrrhiza glabra</i>	G	R	92.4
<i>Glycyrrhiza glabra</i>	G	S	28.6
<i>Hamamelis virginiana</i>	G	R	100.0
<i>Hamamelis virginiana</i>	G	S	29.3
<i>Hedeoma pulegioides</i>	G	O	60.0
<i>Helenium hoopesii</i>	G	O	37.3
<i>Helenium hoopesii</i>	G	S	34.7
<i>Helianthus tuberosus</i>	G	V	21.4
<i>Helichrysum thianschanicum</i>	G	O	43.0
<i>Helichrysum thianschanicum</i>	G	R	39.2
<i>Heliotropium arborescens</i>	G	R	22.8
<i>Heliotropium arborescens</i>	G	S	39.5
<i>Helleborus niger</i>	G	S	34.2
<i>Hypericum henryi</i>	G	S	23.7
<i>Hypericum perforatum</i>	G	S	23.8
<i>Hyssopus officinalis</i>	G	W	45.1
<i>Hyssopus officinalis</i>	G	S	24.2
<i>Inula helenium</i>	G	W	96.2
<i>Ipomoea batatas</i>	G	V	21.9
<i>Lactuca sativa</i>	G	W	35.1
<i>Laportea canadensis</i>	G	O	25.1
<i>Laportea canadensis</i>	G	S	26.5
<i>Lasertium latifolium</i>	G	S	22.1
<i>Lathyrus sativus</i>	G	O	29.9

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Lathyrus sativus	G	W	27.8
	Lathyrus sativus	G	S	28.1
	Laurus nobilis	G	W	100.0
	Lavandula angustifolia	G	O	65.7
	Ledum groenlandicum	G	O	100.0
	Leonorus cardiaca	G	R	61.3
	Lepidium sativum	G	O	100.0
	Levisticum officinale	G	W	91.4
	Lolium perenne	G	O	37.3
	Lotus tetragonolobus	G	S	21.8
	Lupinus polyphyllus	G	O	42.3
	Malus hupehensis	G	S	25.9
	Medicago sativa	G	S	32.1
	Melaleuca alternifolia	G	O	40.0
	Melissa officinalis	G	S	23.1
	Mentha arvensis	G	S	65.5
	Mentha piperita	G	O	24.2
	Mentha piperita	G	S	23.7
	Mentha piperita	G	V	34.2
	Mentha pulegium	G	O	63.3
	Mentha pulegium	G	V	30.2
	Mentha spicata	G	S	45.9
	Monarda didyma	G	S	47.7
	Nepeta cataria	G	R	100.0
	Nicotiana tabacum	G	O	75.8
	Hordeum vulgare subsp. Vulgare	G	O	33.4
	Ocimum basilicum	G	O	40.1
	Ocimum basilicum	G	S	27.9
	Oenothera biennis	G	O	26.3
	Oenothera biennis	G	R	100.0
	Oenothera biennis	G	O	49.6
	Oenothera biennis	G	S	54.0
	Origanum vulgare	G	W	100.0
	Origanum vulgare	G	O	26.7
	Origanum vulgare	G	S	21.3
	Oryza Sativa	G	S	34.5
	Oxalis Deppei Lodd.	G	O	27.4
	Panicum miliaceum	G	O	25.3
	Pastinaca sativa	G	R	95.0

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Petroselinum crispum</i>	G	R	44.5
	<i>Petroselinum crispum</i>	G	S	26.5
	<i>Peucedanum cervaria</i>	G	R	25.1
	<i>Phaseolus coccineus</i>	G	R	30.9
	<i>Phaseolus coccineus</i>	G	O	27.5
	<i>Phaseolus mungo</i>	G	R	24.3
	<i>Phlox paniculata</i>	G	S	37.9
	<i>Physalis pruinosa</i>	G	S	26.5
	<i>Phytolacca americana</i>	G	S	100.0
	<i>Pimpinella anisum</i>	G	S	23.7
	<i>Plantago coronopus</i>	G	O	25.1
	<i>Plantago major</i>	G	O	25.0
	<i>Plantago major</i>	G	R	20.5
	<i>Plantago major</i>	G	S	23.6
	<i>Poa compressa</i>	G	O	28.5
	<i>Poa pratensis</i>	G	O	37.5
	<i>Polygonum aviculare</i>	G	R	25.4
	<i>Polygonum pensylvanicum</i>	G	O	21.3
	<i>Portulaca oleracea</i>	G	O	28.0
	<i>Poterium sanguisorba</i>	G	O	25.6
	<i>Poterium sanguisorba</i>	G	V	21.9
	<i>Prunella vulgaris</i>	G	O	23.4
	<i>Pteridium aquilinum</i>	G	R	43.1
	<i>Reseda odorata</i>	G	O	46.5
	<i>Rhaphanus sativus</i>	G	S	32.6
	<i>Rheum X cultorum</i>	G	S	20.9
	<i>Ribes nidigrolaria</i>	G	W	29.8
	<i>Ribes nidigrolaria</i>	G	V	53.7
	<i>Ribes nigrum</i>	G	V	20.3
	<i>Ribes Silvestre</i>	G	W	91.6
	<i>Ricinus communis</i>	G	S	46.0
	<i>Rosmarinus officinalis</i>	G	R	60.4
	<i>Rubus idaeus</i>	G	W	28.2
	<i>Rubus occidentalis</i>	G	R	93.6
	<i>Rubus occidentalis</i>	G	O	40.0
	<i>Rumex acetosella</i>	G	V	24.3
	<i>Rumex crispus</i>	G	R	100.0
	<i>Rumex patientia</i>	G	O	32.0
	<i>Rumex scutatus</i>	G	V	28.6

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Ruta graveolens</i>	G	S	23.4
	<i>Saccharum officinarum</i>	G	O	30.2
	<i>Salix purpurea</i>	G	S	24.8
	<i>Salvia elegans</i>	G	O	100.0
	<i>Salvia officinalis</i>	G	W	52.4
	<i>Salvia officinalis</i>	G	R	100.0
	<i>Salvia officinalis</i>	G	O	100.0
	<i>Salvia sclarea</i>	G	O	100.0
	<i>Salvia sclarea</i>	G	V	23.0
	<i>Salvia sclarea</i>	G	W	31.1
	<i>Sambucus ebulus</i>	G	O	52.1
	<i>Sambucus ebulus</i>	G	R	48.6
	<i>Sanguisorba officinalis</i>	G	R	100.0
	<i>Santolina chamaecyparissus</i>	G	O	100.0
	<i>Serratula tinctoria</i>	G	S	56.8
	<i>Satureja montana</i>	G	O	34.1
	<i>Scolymus hispanicus</i>	G	R	37.9
	<i>Scutellaria lateriflora</i>	G	S	54.7
	<i>Senecio vulgaris</i>	G	R	35.3
	<i>Solidago sp</i>	G	S	22.6
	<i>Sonchus oleraceus</i>	G	O	23.7
	<i>Sorghum californicum</i>	G	V	27.1
	<i>Sorghum dochna</i>	G	S	40.7
	<i>Sorghum dochna</i>	G	O	21.4
	<i>Sorghum sudanense</i>	G	V	23.3
	<i>Sorghum sudanense</i>	G	W	92.9
	<i>Stellaria graminea</i>	G	O	25.4
	<i>Stellaria media</i>	G	O	30.4
	<i>Stellaria media</i>	G	R	22.0
	<i>Tanacetum vulgare</i>	G	O	57.3
	<i>Tanacetum vulgare</i>	G	S	38.4
	<i>Tanacetum vulgare</i>	G	O	38.2
	<i>Tanacetum vulgare</i>	G	W	26.3
	<i>Taraxacum officinale</i>	G	V	20.0
	<i>taraxacum officinale</i>	G	O	28.0
	<i>Thymus fragrantissimus</i>	G	R	79.9
	<i>Thymus fragrantissimus</i>	G	O	26.2
	<i>Thymus herba-barona</i>	G	W	20.2
	<i>Thymus serpyllum</i>	G	V	22.2

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Triticosecale</i> spp.	G	S	29.7
	<i>Triticum durum</i>	G	S	37.8
	<i>Triticum spelta</i>	G	O	31.0
	<i>Triticum spelta</i>	G	S	37.9
	<i>Typha latifolia</i>	G	S	27.5
	<i>Urtica dioica</i>	G	O	60.3
	<i>Vaccinium corymbosum</i>	G	S	33.2
	<i>Vaccinium angustifolium</i>	G	S	43.7
	<i>Vaccinium macrocarpon</i>	G	W	57.8
	<i>Vaccinium macrocarpon</i>	G	S	59.9
	<i>Valerianella locusta</i>	G	O	32.1
	<i>Veratrum viride</i>	G	O	22.1
	<i>Verbascum thapsus</i>	G	S	33.8
	<i>Viburnum trilobum</i>	G	V	21.3
	<i>Viburnum trilobum</i>	G	W	73.0
	<i>Vicia faba</i>	G	S	21.2
	<i>Vigna unguiculata</i>	G	R	20.1
	<i>Vitis</i>	G	V	26.0
	<i>Vitis</i>	G	W	66.1
	<i>Vitis</i>	G	O	41.7
	<i>Vitis</i>	G	S	30.7
	<i>Xanthium sibiricum</i>	G	O	22.1
	<i>Zea mays</i>	G	S	20.3
	<i>Abies lasiocarpa</i>	T	S	22.4
	<i>Achillea millefolium</i>	T	S	21.1
	<i>Aconitum napellus</i>	T	O	100.0
	<i>Aconus calamus</i>	T	S	21.0
	<i>Ageratum conyzoides</i>	T	O	20.1
	<i>Agrimonia eupatoria</i>	T	W	59.6
	<i>Agropyron cristatum</i>	T	R	53.4
	<i>Agropyron repens</i>	T	S	22.6
	<i>Agrostis alba</i>	T	O	25.3
	<i>Alchemilla mollis</i>	T	W	88.7
	<i>Alchemilla mollis</i>	T	O	42.6
	<i>Alchemilla mollis</i>	T	R	70.4
	<i>Alchemilla mollis</i>	T	S	31.2
	<i>Allium ascalonicum</i>	T	S	42.9
	<i>Allium sativum</i>	T	O	100.0
	<i>Allium tuberosum</i>	T	O	100.0

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Alpinia officinarum</i>	T	O	21.9
	<i>Alpinia officinarum</i>	T	S	100.0
	<i>Amaranthus candatus</i>	T	S	36.0
	<i>Amaranthus gangeticus</i>	T	S	66.8
	<i>Ananas comosus</i>	T	O	20.3
	<i>Ananas comosus</i>	T	W	23.8
	<i>Anethum graveolens</i>	T	O	35.8
	<i>angelica archangelica</i>	T	R	53.5
	<i>Anthemis nobilis</i>	T	O	45.3
	<i>Anthemis tinctorium</i>	T	S	47.5
	<i>Anthriscus cerefolium</i>	T	O	20.5
	<i>Arctium minus</i>	T	O	54.1
	<i>Arctostaphylos uva-ursi</i>	T	O	28.1
	<i>Arctostaphylos uva-ursi</i>	T	R	100.0
	<i>Aronia melanocarpa</i>	T	V	100.0
	<i>Aronia melanocarpa</i>	T	W	42.7
	<i>Aronia prunifolia</i>	T	W	39.0
	<i>Artemisia absinthium</i>	T	O	25.6
	<i>Artemisia dracunculid</i>	T	O	31.3
	<i>Artemisia dracunculid</i>	T	S	22.3
	<i>Aster</i>	T	S	20.9
	<i>Avena sativa</i>	T	S	100.0
	<i>Averrhoa carambola</i>	T	O	25.8
	<i>Beta vulgaris</i>	T	R	100.0
	<i>Beta vulgaris</i>	T	O	59.3
	<i>Beta vulgaris</i>	T	S	41.4
	<i>Betula glandulosa</i>	T	S	61.8
	<i>Boesenbergia rotunda</i>	T	O	36.9
	<i>Boesenbergia rotunda</i>	T	S	42.5
	<i>Boletus edulis</i>	T	S	43.1
	<i>Borago officinalis</i>	T	S	36.3
	<i>Brassica hirta</i>	T	S	30.2
	<i>Brassica juncea</i>	T	R	41.4
	<i>Brassica Napus</i>	T	S	29.9
	<i>Brassica napus</i>	T	R	22.9
	<i>Brassica oleracea</i>	T	R	25.6
	<i>Brassica oleracea</i>	T	V	27.0
	<i>Brassica oleracea</i>	T	R	26.5
	<i>Brassica rapa</i>	T	R	24.8

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Bromus inermis</i>	T	O	27.8
	<i>Canna edulis</i>	T	O	40.3
	<i>Capsicum annuum</i>	T	S	22.6
	<i>Carex morrowii</i>	T	O	26.0
	<i>Carex morrowii</i>	T	R	49.8
	<i>Carya cordiformis</i>	T	S	28.8
	<i>Carya cordiformis</i>	T	O	21.0
	<i>Carya cordiformis</i>	T	W	88.7
	<i>Clematis armandii</i>	T	O	20.1
	<i>Chaerophyllum bulbosum</i>	T	O	22.8
	<i>Chaerophyllum bulbosum</i>	T	S	24.3
	<i>Agaricus bisporatus</i>	T	S	25.4
	<i>Chelidonium majus</i>	T	O	39.0
	<i>Chenopodium bonus-henricus</i>	T	S	44.3
	<i>chrysanthemum coronarium</i>	T	O	33.4
	<i>chrysanthemum coronarium</i>	T	S	23.9
	<i>Cichorium endivia subs. Endivia</i>	T	O	44.3
	<i>Cichorium endivia subs. Endivia</i>	T	S	20.5
	<i>Circium arvense</i>	T	R	49.7
	<i>Citrullus colocynthis</i>	T	R	37.0
	<i>Citrullus colocynthis</i>	T	S	35.5
	<i>Citrus limetoides</i>	T	O	47.1
	<i>Citrus limon</i>	T	S	26.2
	<i>Citrus limon</i>	T	O	73.9
	<i>Citrus sinensis</i>	T	V	25.2
	<i>Coix Lacynma-Jobi</i>	T	O	32.7
	<i>Coix Lacynma-Jobi</i>	T	S	31.4
	<i>Corchorus olitorius</i>	T	O	24.4
	<i>Cornus canadensis</i>	T	S	41.3
	<i>Crataegus sp</i>	T	S	34.0
	<i>Crataegus submolilis</i>	T	S	39.6
	<i>Curcuma longa</i>	T	O	55.3
	<i>Curcuma zedoaria</i>	T	O	24.4
	<i>Cydonia oblonga</i>	T	V	35.2
	<i>Cynara scolymus</i>	T	O	41.2
	<i>Cynara scolymus</i>	T	R	36.8
	<i>Dactylis Glomerata</i>	T	O	31.9
	<i>Datura stramonium</i>	T	S	25.9
	<i>Daucus carota</i>	T	R	92.3

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Daucus carota</i>	T	O	31.0
	<i>Dipsacus sativus</i>	T	O	100.0
	<i>Dirca palustris</i>	T	S	31.4
	<i>Dolichos lablab</i>	T	O	23.1
	<i>Dryopteris filix-mas</i>	T	R	68.2
	<i>Echinacea purpurea</i>	T	S	38.2
	<i>Eleusine coracana</i>	T	O	22.1
	<i>Elymus junceus</i>	T	R	37.9
	<i>Erigeron speciosus</i>	T	O	35.0
	<i>Erysimum perofskianum</i>	T	O	22.6
	<i>Erysimum perofskianum</i>	T	S	23.2
	<i>Fagopyrum esculentum</i>	T	S	24.7
	<i>Foeniculum vulgare</i>	T	O	31.4
	<i>Foeniculum vulgare</i>	T	V	69.1
	<i>Foeniculum vulgare</i>	T	S	38.5
	<i>Fragaria x ananassa</i>	T	O	50.4
	<i>Fragaria x ananassa</i>	T	V	30.2
	<i>Fragaria x ananassa</i>	T	S	28.4
	<i>Passiflora spp.</i>	T	O	30.2
	<i>Passiflora spp.</i>	T	V	59.4
	<i>Passiflora spp.</i>	T	S	24.4
	<i>Fucus vesiculosus</i>	T	O	42.7
	<i>Galinsoga ciliata</i>	T	R	49.3
	<i>Gaultheria hispidula</i>	T	W	36.9
	<i>Gentiana macrophylla</i>	T	S	26.1
	<i>Ginkgo biloba</i>	T	V	27.1
	<i>Glycyrrhiza glabra</i>	T	W	58.1
	<i>Glycyrrhiza glabra</i>	T	S	50.4
	<i>Glycyrrhiza glabra</i>	T	R	25.1
	<i>Gossypium herbaceum</i>	T	O	22.7
	<i>Gossypium herbaceum</i>	T	S	27.3
	<i>Guizotia abyssinica</i>	T	S	38.5
	<i>Hamamelis virginiana</i>	T	O	37.1
	<i>Hamamelis virginiana</i>	T	R	100.0
	<i>Hedeoma pulegioides</i>	T	O	28.5
	<i>Hedeoma pulegioides</i>	T	S	28.2
	<i>Helenium hoopesii</i>	T	O	31.7
	<i>Helenium hoopesii</i>	T	S	56.0
	<i>Helianthus tuberosus</i>	T	V	23.7

Table 9
HLE

Latin name	Stress	Extract	Inhibition (%)
<i>Helichrysum thianschanicum</i>	T	O	38.4
<i>Helichrysum thianschanicum</i>	T	R	27.0
<i>Helieborus niger</i>	T	S	32.1
<i>Schizonepeta tenuifolia</i>	T	O	29.1
<i>Schizonepeta tenuifolia</i>	T	S	21.1
<i>Hibiscus cannabinus</i>	T	O	39.9
<i>Hibiscus cannabinus</i>	T	S	21.1
<i>Humulus lupulus</i>	T	S	54.8
<i>Humulus lupulus</i>	T	R	50.5
<i>Hydrastis canadensis</i>	T	O	20.9
<i>Hypericum henryi</i>	T	O	32.5
<i>Hypericum perforatum</i>	T	S	27.9
<i>Hypericum sp</i>	T	W	55.9
<i>Hypomyces lactifluorum</i>	T	S	42.7
<i>Iberis amara</i>	T	S	100.0
<i>Inula helenium</i>	T	S	30.1
<i>Ipomoea batatas</i>	T	V	27.4
<i>Ipomoea batatas</i>	T	S	44.9
<i>Juniperus communis</i>	T	S	57.8
<i>Laportea canadensis</i>	T	S	63.5
<i>Laurus nobilis</i>	T	W	73.6
<i>Laurus nobilis</i>	T	S	21.2
<i>Lavandula angustifolia</i>	T	O	22.7
<i>Lavandula angustifolia</i>	T	S	25.1
<i>Lavandula latifolia</i>	T	O	100.0
<i>Lavandula latifolia</i>	T	S	28.5
<i>Ledum groenlandicum</i>	T	O	54.3
<i>Lentinus edodes</i>	T	S	25.7
<i>Leonurus cardiaca</i>	T	R	24.3
<i>Lepidium sativum</i>	T	O	100.0
<i>Levisticum officinale</i>	T	R	41.2
<i>Litchi chinensis</i>	T	S	100.0
<i>Lolium multiflorum</i>	T	O	24.0
<i>Lolium perenne</i>	T	O	27.8
<i>Lonicera ramosissima</i>	T	S	20.9
<i>Lupinus polyphyllus</i>	T	O	35.1
<i>Lupinus polyphyllus</i>	T	S	20.5
<i>Luzula sylvatica</i>	T	R	22.6
<i>Majorana hortensis</i>	T	V	20.1

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Malus spp.	T	V	37.8
	Malus spp.	T	S	45.1
	Malus rupehensis	T	S	24.4
	Melaleuca alternifolia	T	O	26.7
	Melissa officinalis	T	S	20.7
	mentha arvensis	T	R	34.0
	Mentha piperita	T	S	60.1
	Mentha pulegium	T	V	24.5
	Mentha pulegium	T	W	24.8
	Mentha spicata	T	O	24.4
	Mentha suaveolens	T	S	28.9
	Monarda didyma	T	O	54.7
	Musa paradisiaca	T	O	21.4
	Musa paradisiaca	T	W	32.8
	nasturtium officinale	T	O	100.0
	Nepeta cataria	T	O	60.1
	Nepeta cataria	T	S	23.4
	Nigella sativa	T	S	23.2
	Agaricus bisporatus	T	S	25.8
	Psidium spp.	T	S	28.3
	Pleurotus spp.	T	S	31.6
	Citrus reticulata	T	V	32.7
	Citrus reticulata	T	S	29.4
	Ocimum Basilicum	T	V	30.7
	Ocimum Basilicum	T	W	30.9
	Ocimum Basilicum	T	O	39.1
	Oenothera biennis	T	S	29.6
	Oenothera biennis	T	O	24.2
	Oenothera biennis	T	R	58.6
	Onobrychis viciifolia	T	O	42.6
	Origanum vulgare	T	S	53.8
	Oryza sativa	T	S	33.3
	Oxalis Deppei	T	O	30.8
	Panicum miliaceum	T	S	21.2
	Pastinaca sativa	T	S	53.9
	Pastinaca sativa	T	R	20.8
	Pastinaca sativa	T	O	26.9
	Petroselinum crispum	T	R	58.2
	Phaseolus coccineus	T	S	27.1

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Phaseolus vulgaris	T	W	37.9
	Phaseolus vulgaris	T	O	22.2
	Phaseolus vulgaris	T	S	23.2
	Phlox paniculata	T	S	21.3
	Physalis pruinosa	T	S	35.2
	Phytolacca americana	T	S	100.0
	Plantago coronopus	T	O	21.2
	Plantago coronopus	T	S	48.2
	Poa pratensis	T	O	50.7
	Podophyllum peltatum	T	S	27.9
	Polygonum chinense	T	S	25.0
	Polygonum aviculare	T	O	26.0
	Polygonum aviculare	T	R	100.0
	Polygonum pennsylvanicum	T	O	42.3
	Polygonum persicaria	T	O	28.8
	Populus incassata	T	S	100.0
	Populus Tremula	T	S	48.5
	Populus X petrowskyana	T	S	44.1
	Populus X petrowskyana	T	O	100.0
	Populus X petrowskyana	T	W	72.0
	Portulaca oleracera	T	O	33.7
	Poterium sanguisorba	T	W	100.0
	Prunus spp.	T	S	39.6
	Prunus persica	T	O	21.4
	Prunus persica	T	V	26.6
	Psidium guajava	T	V	37.7
	Psoralea corylifolia	T	S	51.5
	Pteridium aquilinum	T	R	76.2
	Pteridium aquilinum	T	S	27.9
	Punica granatum	T	W	66.4
	Rehmannia glutinosa	T	O	83.0
	Frangula alnus	T	S	40.7
	Raphanus sativus	T	R	36.5
	Raphanus sativus	T	S	22.4
	Reseda luteola	T	S	23.6
	Reseda odorata	T	O	20.3
	Frangula alnus	T	R	65.3
	Rheum officinale	T	O	100.0
	Rheum officinale	T	S	33.3

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Rheum X cultorum</i>	T	S	34.0
	<i>Ricinus communis</i>	T	S	27.5
	<i>Ribes Grossularia</i>	T	W	24.8
	<i>Ribes nidigrolaria</i>	T	W	24.4
	<i>Ribes nigrum</i>	T	S	50.1
	<i>Ribes nigrum</i>	T	V	23.8
	<i>Ribes nigrum</i>	T	W	64.1
	<i>Ribes Sylvestre</i>	T	W	32.4
	<i>Rosa rugosa</i>	T	W	100.0
	<i>Rosmarinus officinalis</i>	T	R	75.8
	<i>Rosmarinus officinalis</i>	T	W	46.6
	<i>Rubus idaeus</i>	T	O	27.6
	<i>Rubus idaeus</i>	T	S	24.3
	<i>Rubus idaeus</i>	T	O	35.5
	<i>Rubus occidentalis</i>	T	R	93.2
	<i>Rubus occidentalis</i>	T	O	42.1
	<i>Rubus occidentalis</i>	T	S	20.5
	<i>Rumex acetosella</i>	T	V	44.9
	<i>Rumex crispus</i>	T	O	31.3
	<i>Rumex crispus</i>	T	R	100.0
	<i>Rumex crispus</i>	T	S	20.8
	<i>Ruta graveolens</i>	T	O	24.1
	<i>Serenoa repens</i>	T	S	28.5
	<i>Salvia officinalis</i>	T	R	66.5
	<i>Salvia officinalis</i>	T	O	54.0
	<i>Salvia officinalis</i>	T	W	47.2
	<i>Sambucus canadensis</i>	T	S	23.2
	<i>Sambucus canadensis</i>	T	O	35.0
	<i>Sambucus canadensis</i>	T	R	32.6
	<i>Sambucus canadensis</i>	T	W	54.0
	<i>Sanguisorba minor</i>	T	W	50.0
	<i>Santolina chamaecyparissus</i>	T	O	75.8
	<i>Santolina chamaecyparissus</i>	T	R	33.3
	<i>Serratula tinctoria</i>	T	S	36.3
	<i>Datura metel</i>	T	O	36.9
	<i>Datura metel</i>	T	S	21.4
	<i>Satureja montana</i>	T	O	100.0
	<i>Satureja montana</i>	T	R	66.8
	<i>Satureja repandra</i>	T	R	87.4

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Scorzonera hispanica	T	R	42.3
	Scorzonera hispanica	T	S	20.8
	Scutellaria lateriflora	T	S	36.6
	Sium sisarum	T	O	22.1
	Solanum melongena	T	O	22.4
	Solidago sp	T	S	22.6
	Sonchus oleraceus	T	R	41.8
	Sorghum caffrorum	T	O	23.0
	Sorghum dochna	T	O	30.3
	Sorghum dochna	T	O	53.5
	Sorghum durra	T	V	21.6
	Sorghum sudanense	T	V	23.7
	Stachys byzantina	T	O	25.3
	Stellaria graminea	T	O	27.6
	Stellaria graminea	T	S	36.7
	Stellaria media	T	O	22.6
	Stipa capillata	T	O	36.7
	Symphitum officinale	T	O	20.6
	Symphitum officinale	T	V	25.0
	Tanacetum cinerariifolium	T	R	24.9
	Tanacetum vulgare	T	O	46.4
	Tanacetum vulgare	T	S	32.0
	Taraxacum officinale	T	O	63.1
	Thlaspi arvense	T	O	32.5
	Thymus fragantissimus	T	R	36.7
	Thymus fragantissimus	T	O	100.0
	Thymus praecox subsp arcticus	T	O	38.7
	Thymus pseudolanuginosus	T	R	21.5
	Thymus vulgaris	T	W	20.0
	Triticosecale spp.	T	O	26.0
	Triticum aestivum	T	O	20.9
	Triticum turgidum	T	O	49.4
	Triticum spelta	T	O	35.0
	Tropaeolum majus	T	S	23.5
	Tsuga diversifolia	T	S	34.3
	Tsuga mertensiana	T	S	32.8
	Typha latifolia	T	S	36.1
	Urtica dioica	T	O	32.8
	Vaccinium angustifolium	T	S	33.7

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Vaccinium macrocarpon	T	V	24.1
	Vaccinium macrocarpon	T	W	30.3
	Vaccinium macrocarpon	T	S	70.9
	Vaccinium macrocarpon	T	O	57.2
	Valeriana officinalis	T	O	26.0
	Valerianella locusta	T	O	53.7
	Verbascum thapsus	T	O	22.8
	Verbascum thapsus	T	S	25.2
	Veronica officinalis	T	O	29.9
	Vitis	T	S	39.1
	Vitis	T	O	40.0
	Vitis	T	W	23.5
	Vitis	T	S	26.4
	Weigela coraeensis	T	S	20.1
	Weigela hortensis	T	S	25.3
	Xanthium sibiricum	T	O	28.4
	Zea mays	T	S	38.4
	Oenothera biennis	A	R	80.3
	Alchemilla mollis	T	R	96.0
	Alchemilla mollis	A	R	87.2
	Symphytum officinale	A	O	80.2
	Fragaria ananassa	A	R	97.9
	Fragaria ananassa	G	R	93.8
	Vaccinium corymbosum	G	R	58.6
	Vaccinium angustifolium	A	R	71.8
	Vaccinium angustifolium	G	R	53.6
	Vitis	A	R	62.5
	Vitis	G	R	79.4
	Petasites japonicus	A	R	56.5
	Petasites japonicus	G	R	53.0
	Nicotiana rustica	G	O	61.1
	Pysalis ixocarpa	A	R	53.8
	Pteridium aquilinum	T	O	69.2
	Pteridium aquilinum	A	R	66.2
	Pteridium aquilinum	G	R	56.3
	Pteridium aquilinum	G	O	56.2
	Matteuccia pensylvanica	T	R	67.2

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Matteuccia pensylvanica</i>	A	R	59.0
	<i>Ocimum tenuiflorum</i>	T	O	54.8
	<i>Carthamus tinctorius</i>	A	R	50.9
	<i>Carthamus tinctorius</i>	G	R	69.0
	<i>Ligustrum vulgare</i>	T	O	87.0
	<i>Ligustrum vulgare</i>	A	O	76.2
	<i>Ligustrum vulgare</i>	G	O	85.7
	<i>Malva verticillata</i>	T	R	80.1
	<i>Malva verticillata</i>	A	R	82.9
	<i>Malva verticillata</i>	G	R	82.4
	<i>Hamamelis virginiana</i>	T	R	56.1
	<i>Arctostaphylos uva-ursi</i>	T	R	74.8
	<i>Arctostaphylos uva-ursi</i>	G	R	86.0
	<i>Vicia faba</i>	T	O	84.6
	<i>Sempervivum tectorum</i>	T	O	57.3
	<i>Sempervivum tectorum</i>	A	O	74.8
	<i>Sempervivum tectorum</i>	G	O	52.3
	<i>Ajuga reptans</i>	T	O	55.3
	<i>Ajuga reptans</i>	A	O	52.3
	<i>Ajuga reptans</i>	G	O	72.1
	<i>Phlox paniculata</i>	T	O	66.2
	<i>Ligularia dentata</i>	A	O	52.1
	<i>Ligularia dentata</i>	G	R	50.8
	<i>Ligularia dentata</i>	G	O	52.6
	<i>Achillea ptarmica</i>	T	O	50.9
	<i>Achillea ptarmica</i>	A	O	54.3
	<i>Achillea ptarmica</i>	G	O	64.3
	<i>Geranium pratense</i>	T	R	93.4
	<i>Geranium pratense</i>	A	R	98.5
	<i>Geranium pratense</i>	G	R	97.4
	<i>Thalictrum aquilegifolium</i>	T	O	53.6
	<i>Thalictrum aquilegifolium</i>	G	O	60.4
	<i>Veronica spicata</i>	T	O	55.9
	<i>Veronica spicata</i>	A	O	59.2
	<i>Veronica spicata</i>	G	O	56.2
	<i>Helenium spp.</i>	T	O	55.7

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Salvia sylvestris</i>	T	O	77.4
	<i>Salvia sylvestris</i>	A	O	66.9
	<i>Salvia sylvestris</i>	G	O	55.0
	<i>Salvia regeliana</i>	T	O	62.6
	<i>Crambe cordifolia</i>	G	R	56.3
	<i>Crambe cordifolia</i>	G	O	56.7
	<i>Rudbeckia maxima</i>	G	O	68.4
	<i>Trollius x cultorum</i>	T	R	97.6
	<i>Trollius x cultorum</i>	A	R	93.2
	<i>Trollius x cultorum</i>	G	R	100.1
	<i>Amsonia tabernaemontana</i>	A	R	53.2
	<i>Oenothera fruticosa</i> spp.	T	R	109.8
	<i>Oenothera fruticosa</i> spp.	T	O	61.3
	<i>Oenothera fruticosa</i> spp.	A	R	97.5
	<i>Oenothera fruticosa</i> spp.	G	R	105.9
	<i>Veronica austriaca</i> ssp <i>teucrium</i>	T	O	68.6
	<i>Veronica austriaca</i> ssp <i>teucrium</i>	G	O	58.1
	<i>Coreopsis verticillata</i>	T	R	55.6
	<i>Coreopsis verticillata</i>	G	O	70.4
	<i>Potentilla fruticosa</i>	T	R	104.8
	<i>Potentilla fruticosa</i>	A	R	99.4
	<i>Potentilla fruticosa</i>	G	R	98.6
	<i>Vernonia gigantea</i>	A	R	50.4
	<i>Vernonia gigantea</i>	A	O	62.3
	<i>Vernonia gigantea</i>	G	R	51.2
	<i>Vernonia gigantea</i>	G	O	50.7
	<i>Penstemon digitalis</i>	T	R	64.5
	<i>Penstemon digitalis</i>	A	R	63.5
	<i>Penstemon digitalis</i>	A	O	57.3
	<i>Penstemon digitalis</i>	G	R	63.4
	<i>Penstemon digitalis</i>	G	O	67.8
	<i>Malus</i> spp.	T	R	56.1
	<i>Malus</i> spp.	T	O	56.7
	<i>Malus</i> spp.	A	R	50.8
	<i>Malus</i> spp.	G	R	51.2
	<i>Hosta sieboldiana</i>	G	O	50.9

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Hamamelis mollis</i>	T	R	99.1
	<i>Hamamelis mollis</i>	A	R	94.1
	<i>Hamamelis mollis</i>	G	R	89.4
	<i>Chaenomeles x superba</i>	T	R	56.2
	<i>Chaenomeles x superba</i>	A	R	71.9
	<i>Chaenomeles x superba</i>	G	R	66.6
	<i>Chaenomeles x superba</i>	G	O	52.0
	<i>Centaurea dealbata</i>	T	R	50.9
	<i>Centaurea dealbata</i>	A	R	74.1
	<i>Paeonia spp.</i>	T	R	79.8
	<i>Paeonia spp.</i>	T	O	58.6
	<i>Paeonia spp.</i>	A	R	79.6
	<i>Paeonia spp.</i>	A	O	58.5
	<i>Paeonia spp.</i>	G	R	82.0
	<i>Paeonia spp.</i>	G	O	60.0
	<i>Lysimachia clethroides</i>	T	R	83.3
	<i>Lysimachia clethroides</i>	T	O	64.3
	<i>Lysimachia clethroides</i>	G	R	85.8
	<i>Lysimachia clethroides</i>	G	O	67.8
	<i>Magnolia x loebneri</i>	T	R	61.4
	<i>Iberis sempervirens</i>	T	O	62.4
	<i>Iberis sempervirens</i>	G	O	63.8
	<i>Filipendula vulgaris</i>	T	R	98.3
	<i>Filipendula vulgaris</i>	A	R	94.5
	<i>Filipendula vulgaris</i>	G	R	96.3
	<i>Geranium sanguineum</i>	T	R	89.4
	<i>Geranium sanguineum</i>	T	O	63.3
	<i>Geranium sanguineum</i>	A	R	82.6
	<i>Geranium sanguineum</i>	A	O	53.2
	<i>Geranium sanguineum</i>	G	R	88.8
	<i>Geranium sanguineum</i>	G	O	57.7
	<i>Philadelphus coronarius</i>	A	O	55.5
	<i>paeonia suffruticosa</i>	T	R	58.9
	<i>paeonia suffruticosa</i>	T	O	52.1
	<i>Paeonia suffruticosa</i>	A	R	73.8
	<i>Paeonia suffruticosa</i>	A	O	52.2

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Paeonia suffruticosa</i>	G	R	58.7
	<i>Paeonia suffruticosa</i>	G	O	50.4
	<i>Dahlia</i> spp.	T	R	77.4
	<i>Begonia convolvulacea</i>	T	O	69.8
	<i>Begonia convolvulacea</i>	A	O	67.5
	<i>Begonia convolvulacea</i>	G	O	72.6
	<i>Begonia emini</i>	T	O	72.8
	<i>Begonia emini</i>	A	O	77.2
	<i>Begonia emini</i>	G	O	75.4
	<i>Begonia glabra</i>	T	O	82.3
	<i>Begonia mannii</i>	A	O	82.5
	<i>Begonia mannii</i>	G	O	72.8
	<i>Begonia polygonoides</i>	T	O	79.0
	<i>Begonia polygonoides</i>	A	O	74.8
	<i>Begonia polygonoides</i>	G	O	73.2
	<i>Fushia</i> spp.	T	R	76.6
	<i>Fushia</i> spp.	A	R	70.7
	<i>Fushia</i> spp.	G	R	76.9
	<i>Butomus umbellatus</i>	A	O	58.8
	<i>Onoclea sensibilis</i>	G	O	54.7
	<i>Onoclea sensibilis</i>	G	R	50.1
	<i>Pinus cembra</i>	A	R	83.2
	<i>Pinus cembra</i>	G	R	76.3
	<i>Cornus sericea</i>	T	R	104.0
	<i>Cornus sericea</i>	A	O	53.4
	<i>Cornus sericea</i>	A	R	91.8
	<i>Cornus sericea</i>	G	O	51.0
	<i>Cornus sericea</i>	G	R	98.5
	<i>Hydrangea quercifolia</i>	T	R	58.1
	<i>Solidago caesia</i>	T	R	60.7
	<i>Solidago caesia</i>	A	R	60.5
	<i>Cornus alba</i>	T	R	98.9
	<i>Cornus alba</i>	A	R	106.7
	<i>Cornus alba</i>	G	R	85.3
	<i>Carpinus caroliniana</i>	T	R	95.4
	<i>Carpinus caroliniana</i>	A	R	86.2

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Carpinus caroliniana</i>	G	R	94.5
	<i>Astilbe chinensis</i>	T	R	54.3
	<i>Astilbe chinensis</i>	G	R	50.3
	<i>Symphoricarpos albus</i>	G	R	52.0
	<i>Euphorbia amygdaloides</i>	T	R	103.8
	<i>Euphorbia amygdaloides</i>	A	R	75.2
	<i>Euphorbia amygdaloides</i>	G	R	71.3
	<i>Viburnum plicatum</i>	A	R	61.0
	<i>Viburnum plicatum</i>	G	R	57.9
	<i>Buxus microphylla</i>	T	R	58.0
	<i>Astilboides tabularis</i>	T	R	104.2
	<i>Astilboides tabularis</i>	A	R	108.1
	<i>Astilboides tabularis</i>	G	R	100.3
	<i>Staphylea trifolia</i>	A	R	63.6
	<i>Bergenia x schmidtii</i>	T	R	100.5
	<i>Bergenia x schmidtii</i>	A	R	113.7
	<i>Bergenia x schmidtii</i>	G	R	99.3
	<i>Rodgersia podophylla</i>	T	R	68.9
	<i>Rodgersia podophylla</i>	A	R	59.4
	<i>Rodgersia podophylla</i>	G	R	56.5
	<i>Geranium phaeum</i>	T	R	92.7
	<i>Geranium phaeum</i>	A	R	84.3
	<i>Geranium phaeum</i>	G	R	101.0
	<i>Rubus pubescens</i>	T	R	71.5
	<i>Rubus pubescens</i>	A	R	76.2
	<i>Rubus pubescens</i>	G	R	82.8
	<i>Taxus x media</i>	T	R	60.1
	<i>Taxus x media</i>	A	R	61.6
	<i>Taxus x media</i>	G	R	52.3
	<i>Geranium x cantabrigiense</i>	T	R	106.1
	<i>Geranium x cantabrigiense</i>	A	R	94.2
	<i>Geranium x cantabrigiense</i>	G	R	95.9
	<i>Fuchsia magellanica</i>	T	R	100.2
	<i>Fuchsia magellanica</i>	A	R	91.9
	<i>Fuchsia magellanica</i>	G	R	102.2
	<i>Microbiata decussata</i>	A	R	51.5

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	<i>Microbiata decussata</i>	G	R	51.9
	<i>Rhododendron</i> spp.	G	R	51.2
	<i>Stephanandra incisa</i>	T	R	102.5
	<i>Stephanandra incisa</i>	A	R	104.6
	<i>Stephanandra incisa</i>	G	R	99.1
	<i>Corylus maxima</i>	A	R	50.8
	<i>Corylus maxima</i>	G	R	57.1
	<i>Cyperus alternifolius</i>	G	R	56.2
	<i>Soleirolia soleirolia</i>	A	R	51.2
	<i>Soleirolia soleirolia</i>	G	R	68.0
	<i>Strelitzia reginae</i>	T	R	106.5
	<i>Strelitzia reginae</i>	A	R	94.3
	<i>Strelitzia reginae</i>	G	R	111.7
	<i>Hedychium coronarium</i>	T	R	53.5
	<i>Hedychium coronarium</i>	A	R	86.9
	<i>Hedychium coronarium</i>	G	R	74.6
	<i>Strelitzia reginae</i>	T	R	78.6
	<i>Strelitzia reginae</i>	A	R	78.0
	<i>Strelitzia reginae</i>	G	R	107.3
	<i>Symphoricarpos orbiculatus</i>	G	R	58.7
	<i>Rodgersia</i> spp.	A	R	59.5
	<i>Rodgersia</i> spp.	G	R	59.0
	<i>Lamium galeobdolon</i>	T	R	91.5
	<i>Astilbe x arendsii</i>	A	R	84.5
	<i>Clematis alpina</i>	A	R	54.4
	<i>Stewartia pseudocamellia</i>	T	R	75.5
	<i>Stewartia pseudocamellia</i>	A	R	84.1
	<i>Stewartia pseudocamellia</i>	G	R	81.3
	<i>Pinus mugo</i>	T	R	58.9
	<i>Pinus mugo</i>	A	R	53.7
	<i>Pinus mugo</i>	G	R	61.7
	<i>Rubus thibetanus</i>	T	R	97.6
	<i>Rubus thibetanus</i>	A	R	97.9
	<i>Rubus thibetanus</i>	G	R	95.4
	<i>Rubus arcticus</i>	T	R	89.3
	<i>Rubus arcticus</i>	A	R	85.5

Table 9
HLE

	Latin name	Stress	Extract	Inhibition (%)
	Rubus Phoenicolasius	G	R	93.2
	ribes americanum	T	R	70.4
	Passiflora spp.	T	O	62.4
	Rubus occidentalis	T	R	70.9
	Nicotiana tabacum	G	O	60.9
	Beta vulgaris	T	O	71.3

TABLE 10

Plant	Stress ¹	Part of plant ²	Concentration ³	ENZYME ⁴	% Inhib. 6 hr	% Inhib. 24 hr	Potency of inhibition ⁵
<i>Aconitum napellus</i>	G	L	2X	C	0	31	Medium
<i>Acorus calamus</i>	G	L	2X	C	0	9	Weak
<i>Agrostis alba</i>	A	L	1X	A	0	0	None
<i>Alchemilla mollis</i>	A	L	0,8X	C	55	41	Strong
<i>Allium cepa</i>	N	FI	2X	B	49	0	Strong
<i>Allium sativum</i>	A	L	2X	B	NA	10	Weak
<i>Allium tuberosum</i>	A	L	1X	C	0	35	Medium
<i>Aloe vera</i>	G	L	2X	B	0	0	None
<i>Ambrosia artemisiifolia</i>	N	L/St/FI	2X	E	11	25	Medium
<i>Anethum graveolens</i>	A	FI/L/St	2X	B	0	0	None
<i>Anethum graveolens</i>	G	L	1X	C	2	31	Medium
<i>Anethum graveolens</i>	G	L	1X	C	0	0	None
<i>Anthemis tinctoria</i>	A	L/St	2X	C	0	35	Medium
<i>Aronia melanocarpa</i> (Michx.) Ell.	N	L	2X	C	0	38	Medium
<i>Aronia melanocarpa</i> (Michx.) Ell.	G	L	1X	C	0	34	Medium
<i>Aronia x prunifolia</i>	N	L/St	2X	E	0	0	None
<i>Artemisia dracunculus</i>	G	L/St	2X	E	0	0	None
<i>Artemisia dracuncul</i>	N	L/St/Fr	2X	E	0	0	None
<i>Avena sativa</i>	N	L	2X	B	0	21	Medium
<i>Beta vulgaris</i>	G	L	2X	B	12	10	Weak
<i>Beta vulgaris</i> spp. Maritima	N	L	2X	B	0	0	None
<i>Beta vulgaris</i> subsp. Vulgaris	N	L	2X	B	0	0	None
<i>Borago officinalis</i>	N	B	1X	A	16	0	Weak
<i>Brassica napus</i>	N	L	0,7X	E	0	0	None
<i>Brassica oleracea</i>	N	L	2X	B	NA	17	Weak
<i>Brassica oleracea</i>	N	L	2X	B	0	0	None
<i>Brassica oleracea</i>	A	L	0,7X	E	0	14	Weak
<i>Brassica oleracea</i>	G	FI	1X	A	0	0	None
<i>Brassica oleracea</i>	A	L	1X	E	9	16	Weak
<i>Brassica rapa</i>	A	L	2X	B	16	0	Weak
<i>Brassica rapa</i>	G	L	2X	B	11	10	Weak
<i>Bromus inermis</i>	A	L	2X	E	0	0	None
<i>Capsicum annuum</i>	G	Fr	1X	A	0	14	Weak
<i>Cerastium tomentosum</i>	G	L/St	2X	B	5	40	Medium
<i>Chaerophyllum bulbosum</i>	N	FI/Fr	2X	A	0	79	Strong
<i>Chenopodium quinoa</i>	N	L/St	2X	E	26	35	Medium
<i>Chichorium endivia</i>	G	L	2X	B	16	23	Medium
<i>Cirsium arvense</i>	G	L/St	2X	B	0	9	Weak
<i>Citrullus lanatus</i>	A	L	0,5X	E	16	0	Weak
<i>Cornus canadensis</i>	N	L	2X	C	0	44	Strong
<i>Cynara cardunculus</i> subsp. <i>Cardunculus</i>	G	Fr	2X	E	4	5	Weak

TABLE 10

Plant	Stress ¹	Part of plant ²	Concentration ³	ENZYME ⁴	% Inhib. 6 hr	% Inhib. 24 hr	Potency of inhibition ⁵
Daucus carota	A	L	2X	B	0	0	None
Daucus carota	A	L	2X	B	0	0	None
Daucus carota	G	L	2X	B	0	12	Weak
Dioscorea batatas	N	L/FI/Fr	2X	B	0	0	None
Dolichos lablab	G	FI/Fr	2X	E	14	23	Medium
Fagopyrum esculentum	G	L	2X	A	0	0	None
Fagopyrum tataricum	G	L	1X	C	64	38	Strong
Foeniculum vulgare	G	FI	2X	B	0	20	Weak
Foeniculum vulgare	N	L	0,8X	E	0	10	Weak
Fragaria x ananassa	A	L	2X	C	0	0	None
Frangula alnus	N	Fr	2X	C	0	44	Strong
Galinsoga quadriradiata	N	L/St/FI	2X	B	0	0	None
Glycine max	G	Fr	0,7X		0	0	None
Glycyrrhiza glabra	A	L	2X	E	0	0	None
Glycyrrhiza glabra	G	L/St	2X	B	0	0	None
Hamamelis virginiana	A	L/St	2X	A	41	37	Strong
Helianthus strumosus	G	L	2X	B	0	0	None
Heliotropium arborescens	G	FI	2X	C	3	40	Medium
Hordeum vulgare subsp. Vulgare	G	L	1X	A	13	0	Weak
Hypomyces lactifluorum	N	Fr	1X	E	12	0	Weak
Juniperus communis	N	Fr/L/St	2X	C	10	0	Weak
Kochia scoparia	N	L/St/Fr	2X	A	0	0	None
Lactuca sativa	G	L	2X	B	0	0	None
Lentinus edodes	N	Fr	2X	B	24	15	Medium
Lotus corniculatus	A	Fr/L/St	2X	E	0	0	None
Lotus corniculatus	N	P	2X	E	0	0	None
Manihot esculenta	N	Fr	0,5X	E	8	0	Weak
Matricaria recutita	G	FI/L/St	0,5X	E	0	0	None
Melilotus albus	G	L/St	2X	E	0	0	None
Melissa officinalis	N	L/St	0,43X	B	0	0	None
Mentha x piperita	N	L/St/FI	2X	B	23	15	Medium
Origanum majorana	A	L/St/FI	2X	C	0	0	None
Panax quinquefolius	N	Fr	2X	B	0	0	None
Pastinaca sativa	A	L	2X	B	32	20	Medium
Petroselinum crispum	G	FI	2X	B	0	9	Weak
Phalaris canariensis	G	L/FI/Fr/St	2X	B	0	0	None
Phaseolus vulgaris	A	L	0,5X	E	0	0	None
Phaseolus vulgaris	G	L	0,5X	E	0	0	None
Physalis philadelphica	A	L	0,6X	E	26	32	Medium
Phytolacca decandra	G	FI. L	2X	C	0	39	Medium
Phytolacca decandra syn. P. americana	G	FI/L	2X	C	0	39	Medium
Pimpinella anisum	N	Fr/L/St	2X	B	0	0	None

TABLE 10

Plant	Stress ¹	Part of plant ²	Concentration ³	ENZYME ⁴	% Inhib. 6 hr	% Inhib. 24 hr	Potency of inhibition ⁵
Potentilla anserina	N	L	2X	C	9	7	Weak
Poterium sanguisorba	G	L/S	2X	C	0	43	Strong
Poterium sanguisorba	A	L/S	2X	C	0	33	Medium
Pyrus communis	N	Fr	2X	B	9	41	Strong
Raphanus raphanistrum	G	L	0,7X	E	0	0	None
Rheum rhabarbarum	A	L	2X	E	0	36	Medium
Ribes nigrum L.	A	Fr	0,5X	A	0	24	Medium
Ribes sylvestre	N	L	2X	E	0	27	Medium
Ribes sylvestre	G	L/St	2X	C	0	33	Medium
Rosmarinus officinalis	A	L/S	2X	C	0	39	Medium
Rubus occidentalis	N	Fr	2X	E	21	14	Medium
Rumex crispus	A	R	2X	E	6	43	Strong
Rumex crispus	G	R	2X	E	5	10	Weak
Rumex scutatus	N	L	0,5X	E	6	0	Weak
Ruta graveolens	A	L/FI	1X	C	69	71	Strong
Salvia officinalis	A	L/S	2X	E	0	46	Strong
Salvia officinalis	G	L/St	2X	A	NA	20	Medium
Salvia officinalis	G	L/St	2X	A	15	0	Weak
Sambucus canadensis L.	N	L/Fr	2X	B	0	8	Weak
Saponaria officinalis L.	G	L/St	2X	B	0	0	None
Setaria italica	A	L/FI	2X	B	0	0	None
Solanum melongens	N	L	0,5X	A	0	0	None
Solanum melongens	N	L	2X	A	13	12	Weak
Sorghum dochna bicolor gr technicum	N	L	2X	B	0	0	None
Stellaria media	N	L/St/FI	2X	B	0	0	None
Stellaria media	G	L/St/FI	2X	B	0	0	None
Tanacetum cinerariifolium	G	L	2X	E	0	0	None
Taraxacum officinale	N	L	2X	B	24	0	Medium
Taraxacum officinale	G	L	2X	B	0	0	None
Teucrium chamaedrys	A	L/St	2X	A	25	25	Medium
Thymus fragantissimus	N	L/S	2X	B	0	0	None
Thymus fragantissimus	N	L/S	2X	B	0	0	None
Thymus praecox subsp. Arcticus	A	R	1X	A	0	0	None
Thymus x citriodorus	G	L/St	2X	B	0	15	Weak
Trifolium incarnatum	N	L	2X	B	0	0	None
Tropaeolum majus	G	FI	2X	B	11	16	Weak
Tropaeolum majus	G	L	2X	E	0	12	Weak
Tropaeolum majus	N	L	0,56X	E	9	0	Weak
Tsuga diversifolia	N	L/St	2X	E	0	0	None
Vaccinium angustifolium	N	Fr	2X	E	9	11	Weak
Vaccinium angustifolium	G	L/St	2X	C	32	30	Medium
Vitia sp.	A	L	1X	A	13	3	Weak

TABLE 10

Plant	Stress ¹	Part of plant ²	Concentration ³	ENZYME ⁴	% Inhib. 6 hr	% Inhib. 24 hr	Potency of inhibition ⁵
Vitita sp.	N	L	1X	C	0	0	None
x Triticosecale spp.	N	E	2X	B	7	18	Weak
Zea mays	G	L	2X	B	0	0	None
Zea mays	A	L/F	1X	B	5	22	Medium
Zea mays	A	L/FI	1X	B	0	0	None
Zea mays	G	L	2X	B	0	0	None
Zea mays	A	L/FI	0,5X	A	0	0	None
Zea mays	A	L/FI	2X	B	41	23	Strong
Zea mays	A	L/FI	2X	B	0	0	None
Zea mays	A	L/FI	2X	B	0	12	Weak
Zea mays	N	L	0,5X	E	8	24	Medium
Zingiber officinale	N	Fr/L/St	2X	E	0	24	Medium

¹ Stress: A :Arachidonic Acid / G :Gamma-Linolenic Acid / N: No stress treatment

² Part of Plant: B: Buds/ E: Ears/ FI: Flower / Fr: Fruit / L: Leaf / R: Root / S: Seed / St: Stem

³ Original screening dose: 1 X = dose at which an inhibition of 50% was obtained in initial screening.

⁴ Enzyme: A: MMP-1/ B: MMP-2/ C: MMP-3/ E: MMP-9

⁵ Potency of inhibition is defined as follows: Strong: over 40% inhibition at either time point/ Medium: 20-40% inhibition at either time point/Weak: 5-20% inhibition at either time point/ None: 0-5% inhibition at either time point.

TABLE 11

Plant	Stress ¹	Part of Plant ²	Endothelial Cell Migration							
			Cellular Migration Assay % Inhibition				Cord Formation Assay % Inhibition			
			Concentration ³				Concentration ³			
			2.5 x	1.25 x	0.62 x	0.31 x	2.5 x	1.25 x	0.62 x	0.31 x
Allium cepa	N	L	19	28	25	36	0	0	0	0
Allium sativum	A	L	16	27	26	34	0	0	0	0
Ambrosia artemisiifolia	N	L/St	100	90	4	0	99	91	61	57
Ambrosia artemisiifolia	N	Fr/L/St	8	5	NA	NA	ND	ND	ND	ND
Aronia x prunifolia	N	L/St	50	26	20	19	ND	93	75	93
Artemisia dracunculus	G	L/St	81	57	40	30	45	13	22	23
Artemisia dracunculus	N	Fr/L/St	83	50	41	21	0	6	3	2
Avena sativa	N	L	92	75	34	40	100	8	0	0
Beta vulgaris	N	L	30	43	50	47	0	0	0	0
Beta vulgaris	A	L	0	0	0	0	ND	ND	ND	ND
Beta vulgaris	G	L	100	100	26	50	ND	ND	ND	ND
Brassica napus	N	L	ND	ND	ND	ND	ND	ND	ND	ND
Brassica oleracea	N	L	50	29	30	20	35	15	0	4
Brassica oleracea	N	L	37	58	23	4	0	0	0	0
Brassica oleracea	A	L	65	32	15	21	49	28	27	6
Brassica oleracea	A	L	26	17	0	0	0	0	0	0
Brassica rapa	A	L	0	19	31	23	0	0	0	0
Brassica rapa	N	L	25	21	14	6	ND	ND	ND	ND
Bromus inermis	A	L	90	44	36	17	21	14	0	93
Chenopodium quinoa	N	L/St	100	100	44	26	90	85	53	42
Chenopodium quinoa subsp. Quinoa	N	Fr/L/St	100	100	50	33	ND	ND	ND	ND
Chichorium endivia	G	L	83	82	15	0	0	0	0	0
Chichorium endivia subsp. Endivia	G	L	48	11	21	16	ND	ND	ND	ND

TABLE 11

Plant	Stress ¹	Part of Plant ²	Endothelial C II Migration							
			Cellular Migration Assay % Inhibition				Cord Formation Assay % Inhibition			
			Concentration ³				Concentration ³			
			2.5 x	1.25 x	0.62 x	0.31 x	2.5 x	1.25 x	0.62 x	0.31 x
Citrullus lanatus	A	L	88	35	23	14	21	17	6	0
Daucus carota	A	L	100	63	74	32	92	28	0	0
Daucus carota	A	L	62	10	0	0	53	0	0	0
Daucus carota	G	L	0	0	0	0	86	43	25	36
Dolichos lablab	G	Fl/Fr	60	64	68	83	0	0	0	0
Foeniculum vulgare	N	L	64	47	62	61	69	21	23	11
Foeniculum vulgare	G	L	46	2	34	45	ND	ND	ND	ND
Glycyrrhiza glabra	A	L	100	56	0	53	0	0	0	0
Glycyrrhiza glabra	G	L/St	100	34	41	51	0	0	0	0
Helianthus strumosus	G	L	19	27	2	0	87	68	6	0
Hypomyces lactifluorum	N	Fr	46	30	25	20	17	0	0	0
Hypomyces lactifluorum	N	Fr	85	59	31	5	77	67	20	11
Lentinus edodes	N	Fr	40	16	22	14	0	0	0	0
Lotus corniculatus	A	Fr	93	83	77	57	9	0	0	0
Lotus corniculatus	N	P	58	11	26	0	0	0	0	0
Lotus corniculatus	A	Fr/L/St	18	8	NA	NA	ND	ND	ND	ND
Lotus corniculatus	A	Fl/L/St	31	35	NA	NA	ND	ND	ND	ND
Lotus corniculatus	N	Fl/L/St	32	36	NA	NA	ND	ND	ND	ND
Manihot esculenta	N	Fr	33	30	25	26	39	0	0	0
Manihot esculenta	N	Fr	69	24	22	31	0	7	0	20
Matricaria recutita	G	Fl/L/St	55	45	30	24	0	0	0	0
Matricaria recutita	G	Fl/L/St	74	6	1	20	34	31	4	0
Melilotus albus	G	L/St	70	15	0	0	0	0	0	0
Melissa officinalis	N	L/St	7	10	9	7	ND	ND	ND	ND

TABLE 11

Plant	Stress ¹	Part of Plant ²	Endothelial Cell Migration							
			Cellular Migration Assay % Inhibition				Cord Formation Assay % Inhibition			
			Concentration ³				Concentration ³			
			2.5 x	1.25 x	0.62 x	0.31 x	2.5 x	1.25 x	0.62 x	0.31 x
Phaseolus vulgaris	A	L	54	29	10	18	51	17	4	7
Phaseolus vulgaris	G	L	82	56	51	41	33	13	25	18
Physalis philadelphica	A	L	100	100	100	100	100	72	100	81
Pimpinella anisum	N	Fr/L/St	70	64	65	69	40	51	27	42
Pisum sativum	N	L/St	38	16	13	0	16	24	4	0
Raphanus raphanistrum	G	L	88	46	23	23	46	24	0	0
Raphanus raphanistrum	N	Fr	ND	ND	ND	ND	ND	ND	ND	ND
Rheum x hybridum (=Rheum rhabarbarum)	A	L	13	0	NA	NA	ND	ND	ND	ND
Ribes sylvestre	N	L	59	49	69	56	96	87	56	26
Rubus occidentalis	N	Fr	16	9	0	0	0	0	32	0
Rumex crispus	G	R	100	86	36	36	95	82	53	48
Rumex crispus	A	R	100	11	NA	NA	ND	ND	ND	ND
Rumex scutatus	N	L	100	20	0	0	70	6	0	0
Setaria italica	A	L/FI	93	65	54	30	0	0	0	0
Sorghum dochna bicolor gr technicum	N	L	32	0	0	0	0	0	0	0
Stellaria media	N	FI/L/St	33	27	21	28	0	0	0	0
Tanacetum cinerariifolium	G	L	18	21	NA	NA	ND	ND	ND	ND
Taraxacum officinale	N	L	45	11	1	3	5	2	0	2
Taraxacum officinale	G	L	90	40	44	23	0	0	0	0
Thymus fragrantissimus	N	L/St	38	15	11	0	0	0	0	22
Thymus x citriodorus	G	L/St	76	12	8	0	32	35	0	0
Trifolium incarnatum	N	L	47	27	5	10	22	12	24	26
Trifolium incarnatum	N	B/L/St	100	100	41	21	ND	ND	ND	ND
Tropaeolum majus	G	L	57	58	49	42	0	0	0	0

TABLE 11

Plant	Stress ¹	Part of Plant ²	Endothelial Cell Migration							
			Cellular Migration Assay % Inhibition				Tube Formation Assay % Inhibition			
			Concentration ³				Concentration ³			
			2.5 x	1.25 x	0.62 x	0.31 x	2.5 x	1.25 x	0.62 x	0.31 x
<i>Tropaeolum majus</i>	G	L	65	29	18	4	7	0	0	0
<i>Tsuga canadensis</i>	N	L/St	68	41	31	31	ND	80	82	64
<i>Tsuga canadensis</i>	N	L/St	32	18	NA	NA	ND	ND	ND	ND
<i>Tsuga diversifolia</i>	N	L/St	99	43	18	27	57	8	0	0
<i>Vaccinium angustifolium</i>	N	Fr	62	7	11	24	59	15	6	0
<i>x Triticosecale</i> spp.	N	E	80	84	59	49	0	0	0	0
<i>Zea mays</i>	G	L	51	27	0	2	6	26	25	30
<i>Zea mays</i>	A	L/FI	17	0	49	29	0	6	3	2
<i>Zea mays</i>	N	L	66	24	14	6	11	0	0	11
<i>Zingiber officinale</i>	N	Fr	59	38	27	30	0	0	0	0
<i>Zingiber officinale</i>	N	R	0	19	NA	NA	ND	ND	ND	ND

¹ Stress: A :Arachidonic Acid / G :Gamma-Linolenic Acid / N: No stress treatment

² Part of Plant: B: Buds/ Fl: Flower / Fr: Fruit / L: Leaf / P: Pods/ R: Root / S: Seed / St: Stem

³ Original screening dose: 1 X = dose at which an inhibition of 50% was obtained in initial screening.

TABLE 12

Plant	SNress ¹	Part of Plant ²
Arctostaphylos uva-ursi	N	L/St
Arctostaphylos uva-ursi	N	L/St
Beta vulgaris	N	R
Cornus sericea	G	L
Daucus carota	G	L
Euphorbia amygdaloides	G	L/St
Galinsoga quadriradiata	A	Fl
Gentiana lutea	A	L
Geranium sanguineum	N	L/St
Oenothera biennis	A	Fl/Fr/L/St
Potentilla fruticosa	N	Fl/Fr/L/St
Rodgersia spp.	A	L
Rubus thibetanus	G	L/St
Rumex crispus	A	L/Fr
Rumex crispus	G	L
Rumex crispus	N	L/Fr
Vitia sp.	A	Fr

¹ Stress: A :Arachidonic Acid / G :Gamma-Linolenic Acid / N: No stress treatment

² Part of Plant: Fl: Flower / Fr: Fruit / L: Leaf / R: Root / S: Seed / St: Stem

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A plant extract that inhibits the activity of at least one extracellular protease secreted by mammalian skin cells.
2. The plant extract according to claim 1, wherein said extracellular protease is selected from the group of: MMP-1, MMP-3, MMP-9, cathepsin B, cathepsin L, cathepsin G, elastase, or a combination thereof.
3. The plant extract according to claim 1, wherein said extract is capable of attenuating extracellular protease-mediated degradation of the extracellular matrix in mammalian skin.
4. A cosmetic composition comprising one or more plant extract according to claim 1 and a cosmetically acceptable diluent, excipient or carrier.
5. A pharmaceutical composition comprising a therapeutically effective amount of one or more plant extract according to claim 1 and a pharmaceutically acceptable diluent, excipient or carrier.
6. A method of inhibiting one or more extracellular protease in mammalian skin, comprising administering to a mammal an effective amount of one or more plant extract according to claim 1.
7. A method of attenuating extracellular protease (EP)-mediated degradation of the extracellular matrix (ECM) in the skin of a mammal comprising administering to said mammal an effective amount of one or more plant extract, wherein said one or more plant extract is capable of inhibiting the activity of at least one extracellular protease secreted by mammalian skin cells.
8. The method according to claim 7, wherein said EP-mediated degradation of the ECM comprises breakdown of at least one compound selected from the group of: a collagen, elastin and fibronectin.

9. A method of attenuating one or more structural change in the skin of a mammal comprising administering to said mammal an effective amount of one or more plant extract, wherein said one or more plant extract is capable of inhibiting the activity of at least one extracellular protease secreted by mammalian skin cells.
10. The method according to claim 9, wherein said structural change comprises abnormal cell migration.
11. The method according to claim 10, wherein said cell migration is endothelial cell migration.
12. A process for preparing a sub-library of plant extracts that are capable of attenuating structural changes in the skin of a mammal, said process comprising:
 - (a) harvesting plant material from selected plants;
 - (b) contacting said plant material with a solvent to provide a plurality of potential extracts;
 - (c) analysing each potential extract for inhibitory activity against at least one extracellular protease;
 - (d) selecting those potential extracts that are capable of inhibiting the activity of at least one extracellular protease to provide a library of extracts;
 - (e) analysing the ability of each extract in said library to attenuate breakdown of at least one component of the extracellular matrix or to attenuate endothelial cell migration, and
 - (f) selecting those extracts that are capable of attenuating breakdown of a component of the extracellular matrix or endothelial cell migration to provide a sub-library of plant extracts.
13. The process according to claim 12, further comprising subjecting said selected plants to one or more stress prior to harvesting said plant material.
14. A plant extract produced by the process according to claim 12.

ABSTRACT

Extracts from plant material, or semi-purified/purified molecules or compounds prepared from the extracts are provided that inhibit at least one extracellular protease in the skin. The extracts can be used to attenuate structural changes in the skin, for example, the migration of endothelial cells or the breakdown of components of the extracellular matrix. Methods of selecting and preparing the plant extracts are described. The purification or semi-purification of one or more molecules from the described extracts is also contemplated as well as the use of these molecules, alone or in combination with an extract, to attenuate undesirable structural changes in the skin of a mammal.

FIGURE 1

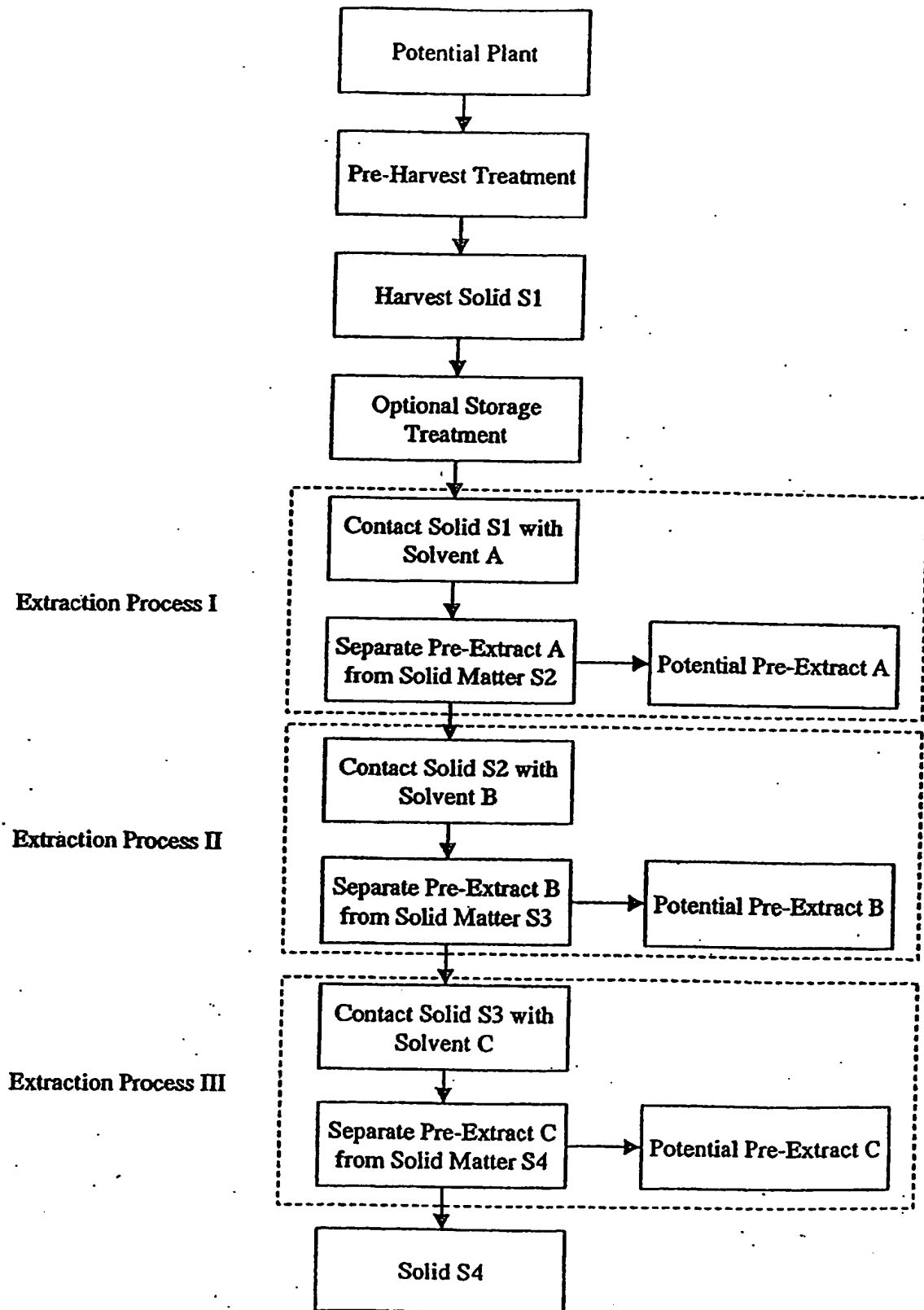


FIGURE 2

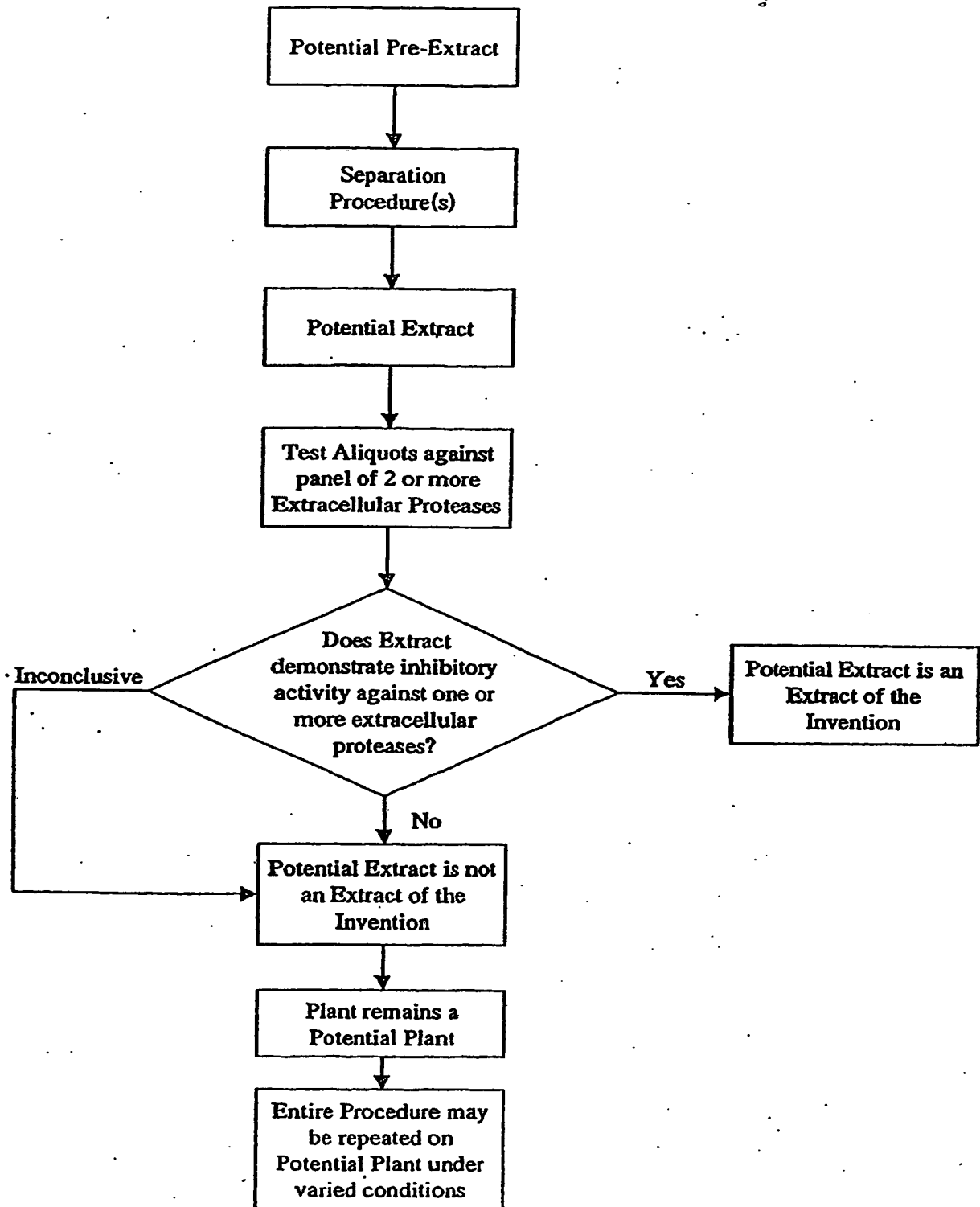


FIGURE 3

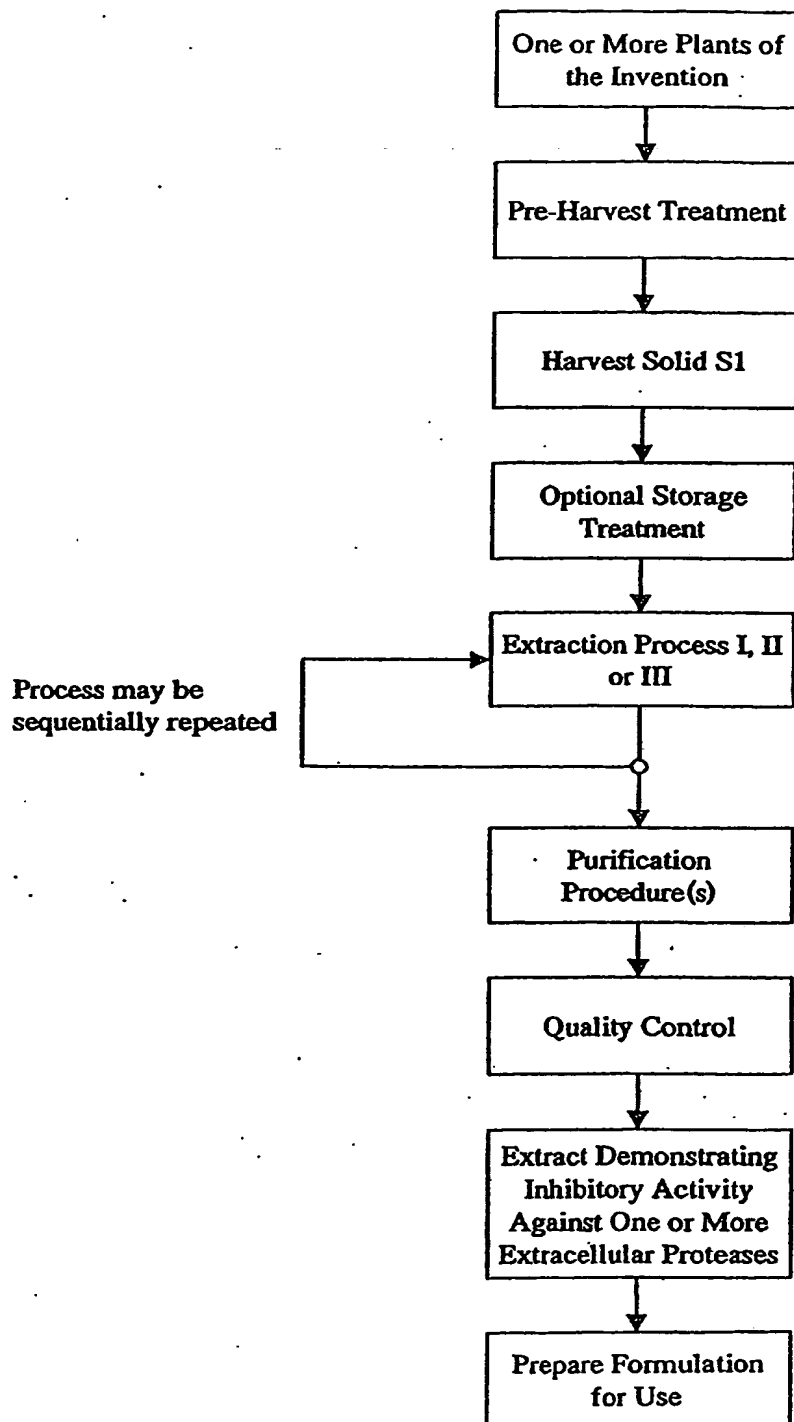
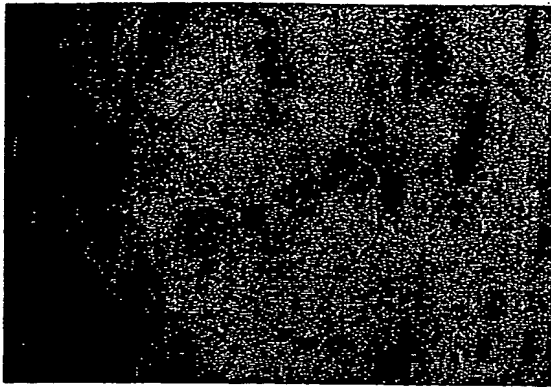
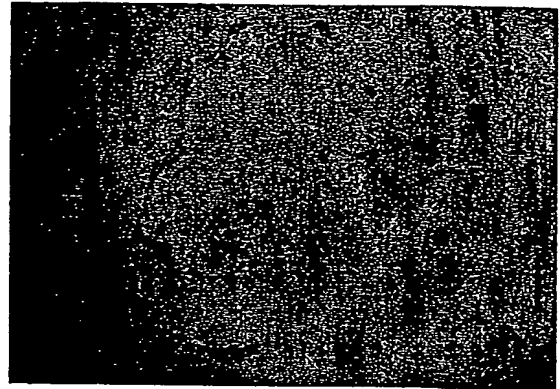


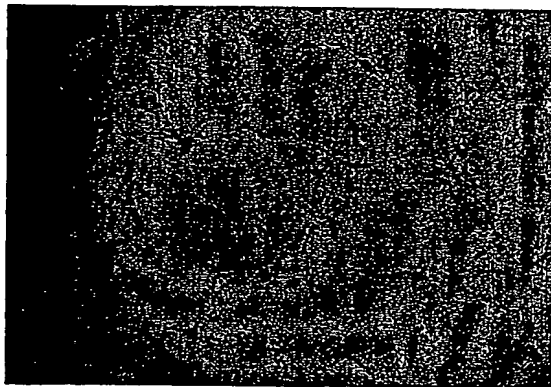
FIGURE 4



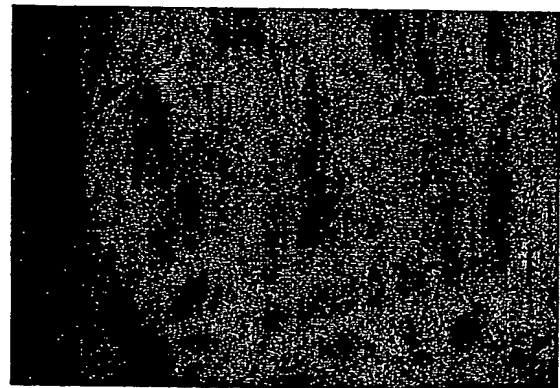
A



B



C



D

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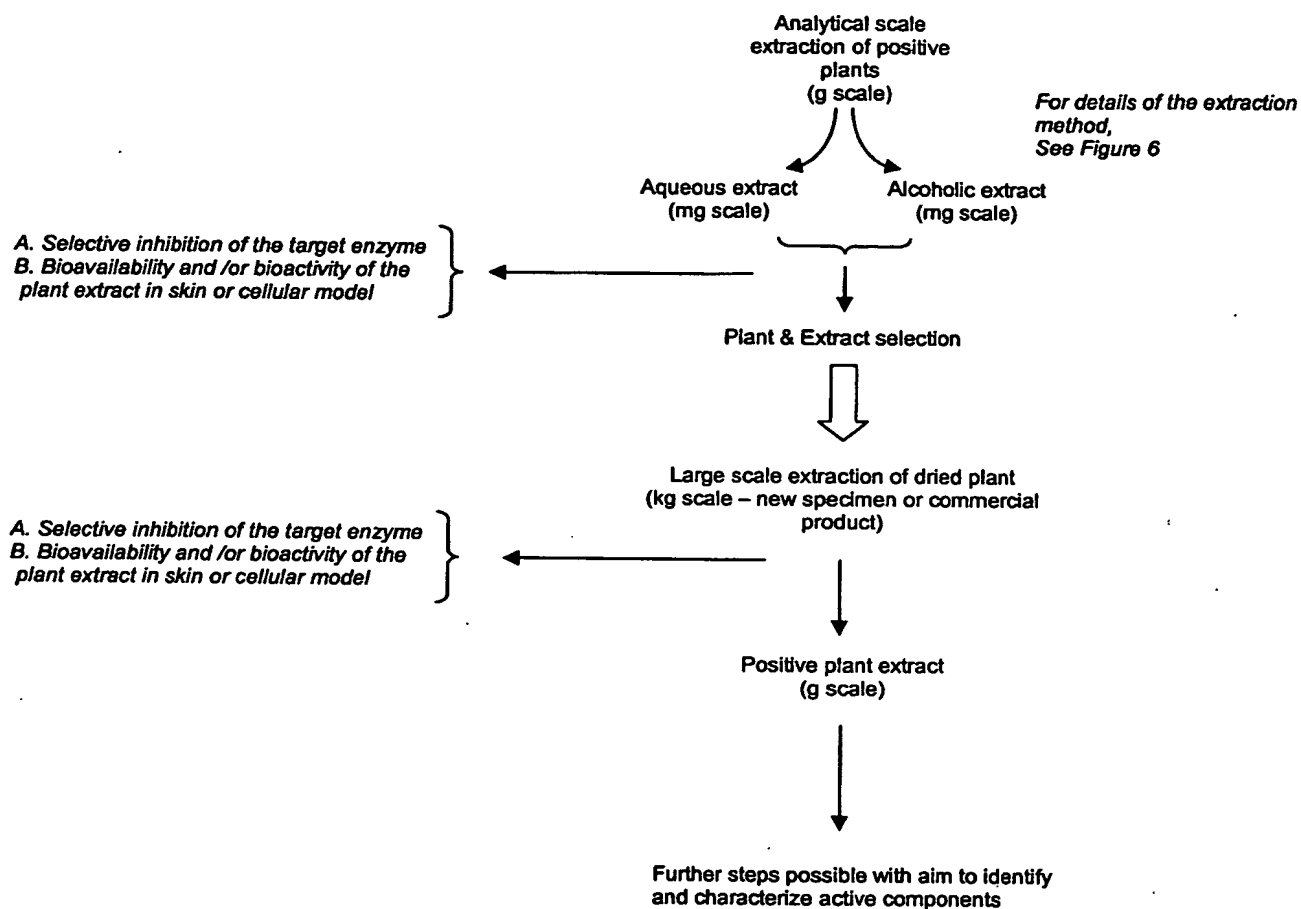


Figure 5

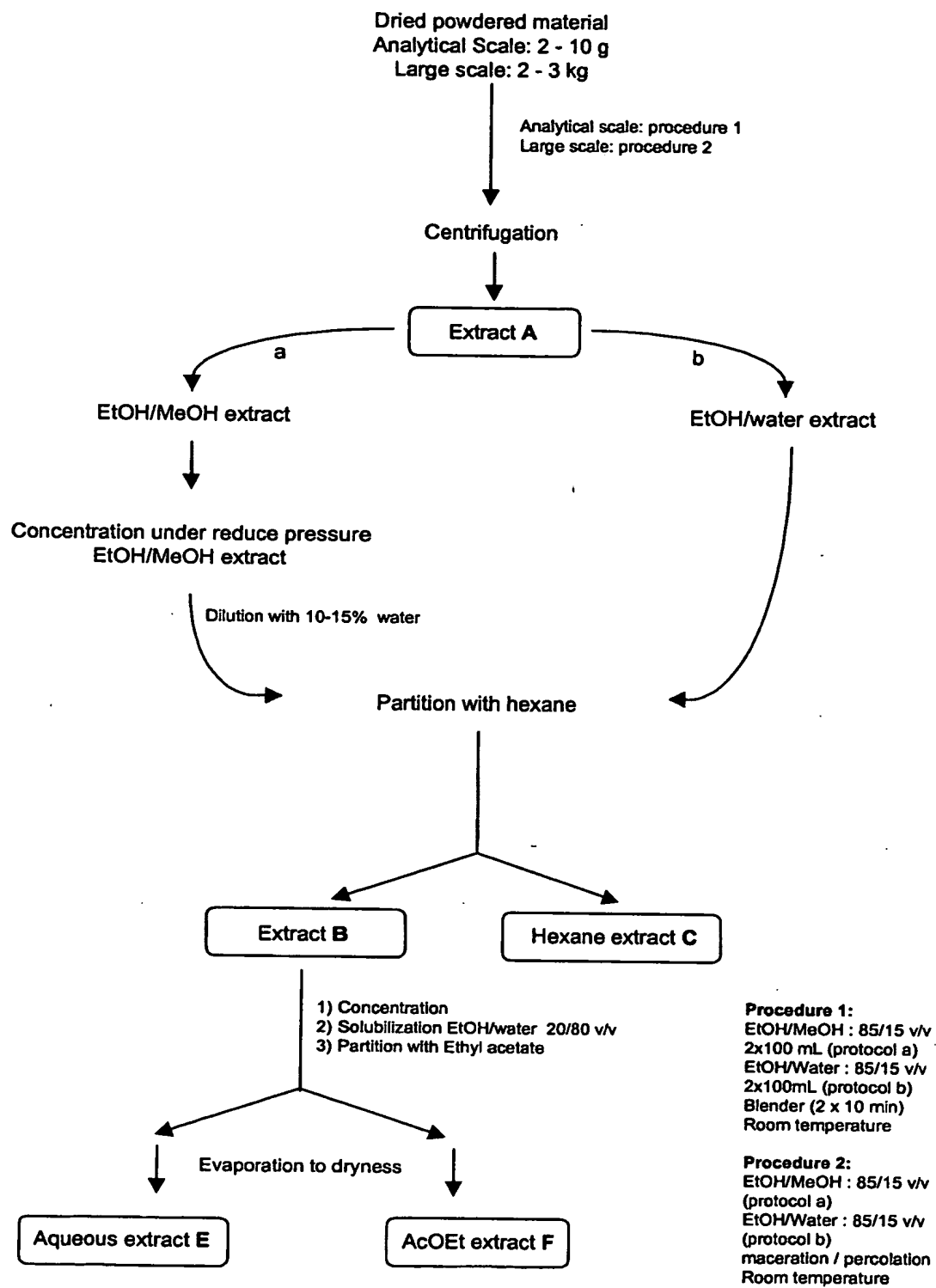


Figure 6